

FIGURE 1

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Leu Ala Ser Arg Cys Arg Cys Cys Arg Pro Leu Thr Leu Ser Phe Ala Leu Cys
 Trp Arg Val Glu Ala Ala Ala Ala Gly Arg Cys Arg *** His Phe His Trp Ala
 Gly Ala Cys Lys Pro Leu Pro Leu Val Glu Ala Ala Asp Thr Phe Ile Gly Leu

 3' TGG TCG CGT GAA GCC GTC GCC GTC GTG GAG CCG TCG CAG TCA CTT TTA CGG TTC
 9 18 27 36 45 54
 * 5' ACC AGC GCA CTT CGG CAG CGG CAG CAC CTC GGC AGC GTC AGT GAA AAT GCC AAG
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Thr Ser Ala Leu Arg Gln Arg Gln His Leu Gly Ser Val Ser Glu Asn Ala Lys
 Pro Ala His Phe Gly Ser Gly Ser Thr Ser Ala Ala Ser Val Lys Met Pro Ser
 Gln Arg Thr Ser Ala Ala Ala Pro Arg Gln Arg *** Lys Cys Gln Ala
 Ser Phe Arg Gly Ala Val Gly Tyr Ser Thr Pro Thr *** Gly *** Tyr Asp Lys
 Leu Phe Ala Ala Arg Leu Gly Met Leu Pro Pro His Glu Gly Lys Ile Ile Arg
 Leu Phe Leu Pro Gly Cys Gly Trp Leu Leu His Thr Asn Val Arg Leu Leu Gly
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 GTT CTT TTC GCC GGG CGT TGG GGT ATT CTC CAC CCA CAA GTG GGA ATT ATT AGG
 63 72 81 90 99 108
 CAA GAA AAG CGG CCC GCA ACC CCA TAA GAG GTG GGT GTT CAC CCT TAA TAA TCC
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Gln Glu Lys Arg Pro Ala Thr Pro *** Glu Val Gly Val His Pro *** Ser
 Lys Lys Ser Gly Pro Gln Pro His Lys Arg Trp Val Phe Thr Leu Asn Asn Pro
 Arg Lys Ala Ala Arg Asn Pro Ile Arg Gly Cys Ser Pro Leu Ile Ile Leu
 Arg Pro Pro Ser Phe Cys Phe Val Pro Ala Glu Leu Arg Gly Lys Gln Asn Asn
 Gly Leu Leu Leu Phe Val Phe Tyr Pro Leu Lys Trp Asp Gly Lys Ile Ile
 Glu Ser Ser Ser Phe Phe Leu Ile Arg Ser Ser Gly Ile Glu Arg Lys Ser ***
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 AAG GCT CCT CTT TTT GTT TTA TGC CCT CGA AGG TTA GAG GGA AAA ACT AAT
 117 126 135 144 153 162
 TTC CGA GGA GGA GAA AAA CAA AAT ACG GCA GCT TCC AAT CTC CCT TTT TGA TTA
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Phe Arg Gly Gly Glu Lys Gln Asn Thr Gly Ala Ser Asn Leu Pro Phe *** Leu
 Ser Glu Glu Glu Lys Asn Lys Ile Arg Glu Leu Pro Ile Ser Leu Phe Asp Tyr
 Pro Arg Arg Arg Lys Thr Lys Tyr Gly Ser Phe Gln Ser Pro Phe Leu Ile Ile
 Gln Lys His Arg Pro Leu Asn Pro Leu Pro Tyr Phe Glu Glu Gly Pro Thr
 Lys Asn Thr Ala Leu Phe Thr Gln Phe Leu Thr Ser Ser Arg Val Glu Leu Pro
 Lys Thr Gln Pro Ser Ser Pro Lys Ser Ser Pro Leu Val Gly *** Arg Trp Pro
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 AAA ACA AAC ACC GCT CCT TCC AAA CCT TCT CCC ATC TTG AGG AGT GGA GGT CCC
 171 180 189 198 207 216
 TTT TGT TTG TGG CGA GGA AGG TTT GGA AGA GGG TAG AAC TCC TCA CCT CCA GGG
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Phe Cys Leu Trp Arg Gly Arg Phe Gly Arg Gly *** Asn Ser Ser Pro Pro Gly
 Phe Val Cys Gly Glu Glu Gly Leu Glu Glu Gly Arg Thr Pro His Leu Gln Gly
 Leu Phe Val Ala Arg Lys Val Trp Lys Arg Val Glu Leu Leu Thr Ser Arg Gly
 Gln Ser Asn Gln *** Ser Ala Ser Lys *** Cys Pro Ser Thr Thr Asn Gln His
 Lys Arg Ile Lys Ser Lgu Leu Leu Ser Lys Val Leu His Leu Pro Ile Lys Thr
 Asn Ala Phe Lys Ala Leu Phe Cys Val Lys Leu Leu Thr Phe His Tyr Lys Pro
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 CAA ACG CTT AAA ACG ATT CTT CGT CTG AAA ATT GTT CCA CTT CAC CAT AAA ACC
 225 234 243 252 261 270
 GTT TGC GAA TTT TGC TAA GAA GCA GAC TTT TAA CAA GGT GAA GTG GTA TTT TGG
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Val Cys Glu Phe Cys *** Gln Ala Asp Phe *** Gln Gly Glu Val Val Phe Trp
 Phe Ala Asn Phe Ala Lys Lys Gln Thr Phe Asn Lys Val Lys Trp Tyr Phe Gly
 Leu Arg Ile Leu Leu Arg Ser Arg Leu Leu Thr Arg *** Ser Gly Ile Leu Val

FIGURE 2

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Gly Ser Gly Cys Arg Ser Leu Ser Leu Phe Arg Gly Ala Ser Tyr Leu Ile Ser
 Gly Ala Ala Val Asp Leu Phe Arg Phe Ser Gly Val Leu Leu Ile Phe Phe Val
 Ala Arg Gln Trp Met Ser Phe Ala Phe Pro Val Ser Trp Cys Phe Leu Ser Tyr
 ACG GGC GAC GGT GTA GCT CTT TCG CTT TCC TTG GCT GGT CGT CTT ATT TCT TAT
 279 288 297 306 315 324
 TGC CCG CTG CCA CAT CGA GAA AGC GAA AGG AAC CGA CCA GCA GAA TAA AGA ATA
 Cys Pro Leu Pro His Arg Glu Ser Glu Arg Asn Arg Pro Ala Glu *** Arg Ile
 Ala Arg Cys His Ile Glu Lys Ala Lys Gly Thr Asp Gln Gln Asn Lys Glu Tyr
 Pro Ala Ala Thr Ser Arg Lys Arg Lys Glu Pro Thr Ser Arg Ile Lys Asn Thr
 -Cys Tyr Leu Leu Gly Cys Val *** Arg Thr His Leu Glu Ala Ser Gly Pro Ser
 Ala Thr Phe Phe Ala Val Tyr Lys Asp Leu Thr Ser Ser Arg Pro Val Leu Pro
 Gln Leu Leu Ser Pro Trp Met Ser Ile Ser His Pro Ala Gly Arg Phe Trp Pro
 GAC GTC ATT TCT TCC GGT GTA TGA ATA GCT CAC ACC TCG AGG CGC CTT GGT CCC
 333 342 351 360 369 378
 CTG CAG TAA AGA AGG CCA CAT ACT TAT CGA GTG TGG AGC TCC GCG GAA CCA GGG
 Leu Gln *** Arg Arg Pro His Thr Tyr Arg Val Trp Ser Ser Ala Glu Pro Gly
 Cys Ser Lys Glu Gly His Ile Leu Ile Glu Cys Gly Ala Pro Arg Asn Gln Gly
 Ala Val Lys Lys Ala Thr Tyr Leu Ser Ser Val Glu Leu Arg Gly Thr Arg Gly
 Ala Cys Arg Gly Thr *** Gln Gln Ser Tyr Gly Lys Pro Ser Pro Thr Lys Pro
 Leu Ala Ala Val Gln Arg Ser Ser His Thr Gly Lys Gln Leu Arg Pro Arg Gln
 Phe Arg Leu Ser Arg Asp Val Ala Thr Leu Val Arg Lys Ser Val Pro Asp Lys
 CTT CGC GTC GCT GGA CAG ATG ACG ACA CTC ATG GGA AAA CCT CTG CCC CAG AAA
 387 396 405 414 423 432
 GAA GCG CAG CGA CCT GTC TAC TGC TGT GAG TAC CCT TTT GGA GAC GGG GTC TTT
 Glu Ala Gln Arg Pro Val Tyr Cys Cys Glu Tyr Pro Phe Gly Asp Gly Val Phe
 Lys Arg Ser Asp Leu Ser Thr Ala Val Ser Thr Leu Leu Glu Thr Gly Ser Leu
 Ser Ala Ala Thr Cys Leu Leu Leu *** Val Pro Phe Trp Arg Arg Gly Leu Trp
 Ser Gln Leu Arg Ala Thr Glu Gln Leu Thr His Ser Phe Asn Gly Arg Ala Pro
 His Ser Tyr Gly Leu Leu Lys Arg Tyr Arg Ile His Ser Ile Glu Ala Pro Gln
 Thr Val Thr Ala Ser Cys Asn Gly Thr Val Tyr Thr Leu Phe Lys Arg Pro Ser
 CCA CTG ACA TCG GCT CGT CAA AGG ACA TTG CAT ACA CTC TTT AAA GGC GCC CGA
 441 450 459 468 477 486
 GGT GAC TGT AGC CGA GCA GTT TCC TGT AAC GTA TGT GAG AAA TTT CCG CGG GCT
 Gly Asp Cys Ser Arg Ala Val Ser Cys Asn Val Cys Glu Lys Phe Pro Arg Ala
 Val Thr Val Ala Glu Gln Phe Pro Val Thr Tyr Val Arg Asn Phe Arg Gly Leu
 *** Leu *** Pro Ser Ser Phe Leu *** Arg Met *** Glu Ile Ser Ala Gly Trp
 Gln Val Lys Ser Leu Ser Arg Ser Ser Ala Ala His Asn Ser Ser Leu Gln
 Ser Phe Lys Gln Phe His Ala Pro Leu His Leu Leu Thr Ile Pro Leu Cys Ser
 Ala Ser Ser Lys Phe Thr Leu Pro Phe Ile Cys Cys Arg Ser Gln Phe Val Ala
 CCG ACT TGA AAA CTT TCA CTC GCC CTT CTA CGT CGT CGC ACT AAC CTT CTG TCG
 495 504 513 522 531 540
 GGC TGA ACT TTT GAA AGT GAG CGG GAA GAT GCA GCA GCG TGA TTG GAA GAC AGC
 Gly *** Thr Phe Glu Ser Glu Arg Glu Asp Ala Ala Ala *** Leu Glu Asp Ser
 Ala Glu Leu Leu Lys Val Ser Gly Lys Met Gln Gln Arg Asp Trp Lys Thr Ala
 Leu Asn Phe *** Lys *** Ala Gly Arg Cys Ser Ser Val Ile Gly Arg Gln Leu

FIGURE 2 (continuation 1)

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FIGURE 2 (continuation 2)

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Gly Pro Ile Thr Ser Arg Leu Gln Gln Gly Leu Gln Leu Leu Glu Arg Asp Ser
 Gly Leu Phe Pro Val Gly *** Ser Ser Asp Trp Ser Tyr Phe Ser Glu Ile Pro
 Gly Trp Ser His Tyr Glu Glu Val Ala Thr Gly Ala Thr Ser Ala Arg *** Arg
 GGG GGT CCT TAC CAT GAG GAG TTG ACG ACA GGG TCG ACA TCT TCG AGA GAT AGC
 819 828 837 846 855 864
 CCC CCA GGA ATG GTA CTC CTC AAC TGC TGT CCC AGC TGT AGA AGC TCT CTA TCG
 Pro Pro Gly Met Val Leu Leu Asn Cys Cys Pro Ser Cys Arg Ser Ser Leu Ser
 Pro Gln Glu Trp Tyr Ser Ser Thr Ala Val Pro Ala Val Gly Ala Leu Tyr Arg
 Pro Arg Asn Gly Thr Pro Gln Leu Leu Ser Gln Leu *** Lys Leu Ser Ile Gly

 Ser *** *** Lys Ala Ile Lys Ser Ser Gln Gln Leu Val Ile Trp Pro Pro Val
 Pro Asn Ser Ser Gln Leu Lys Pro Leu Ser Ser Phe Leu Gly Arg Leu Tyr
 Leu Ile Val Val Lys Cys Asn Gln Phe Val Ala Pro Ser Cys Asp Val Ser Thr
 CTC CTA ATG ATG AAA CGT TAA AAC CTT CTG ACG ACC TCT TGT TAG GTG CCT CCA
 873 882 891 900 909 918
 GAG GAT TAC TAC TTT GCA ATT TTG GAA GAC TGC TGG AGA ACA ATC CAC GGA CGT
 Glu Asp Tyr Tyr Phe Ala Ile Leu Glu Asp Cys Trp Arg Thr Ile His Gly Gly
 Arg Ile Thr Thr Leu Gln Phe Trp Lys Thr Ala Gly Glu Gln Ser Thr Glu Val
 Gly Leu Leu Leu Cys Asn Phe Gly Arg Leu Leu Glu Asn Asn Pro Arg Arg Tyr

 Arg Leu Gly Ile Gln Leu Leu Pro Gly Val Arg His Gly Lys Gly Met Tyr Phe
 Gly Phe Ala Ser Lys Phe Cys His Val Trp Gly Thr Gly Lys Glu Trp Ile Phe
 Gly Ser Pro Arg Asn Ser Ala Thr Ser Gly Gly Gln Ala Arg Lys Gly Tyr Leu
 TGG GCT TCC GGC TAA ACT TCG TCA CCT GGG TGG GAC ACG GGA AAA GGG TAT ATT
 927 936 945 954 963 972
 ACC CGA AGG CCG ATT TGA AGC AGT GGA CCC ACC CTG TGC CCT TTT CCC ATA TAA
 Thr Arg Arg Pro Ile *** Ser Ser Gly Pro Thr Leu Cys Pro Phe Pro Ile ***
 Pro Glu Gly Arg Phe Glu Ala Val Asp Pro Pro Cys Ala Leu Phe Pro Tyr Lys
 Pro Lys Ala Asp Leu Lys Gln Trp Thr His Pro Val Pro Phe Ser His Ile Lys

 Leu Asn Ser Leu Arg Lys Gln *** *** Met Thr Ile Thr Lys Ile Lys Ile ***
 Tyr Ile Val Ser Asp Lys Lys Asn Asp Cys Arg Leu Pro Lys *** Lys *** Glu
 Ile Phe *** Gln Thr Lys Lys Thr Ile Val Asp Tyr His Asn Lys Asn Lys Asn
 TTA TTT AAT GAC TCA GAA AAA ACA ATA GTG TAG CAT TAC CAA AAA TAA AAA TAA
 981 990 999 1008 1017 1026
 AAT AAA TTA CTG AGT CTT TTT TGT TAT CAC ATC GTA ATG GTT TTT ATT TTT ATT
 Asn Lys Leu Leu Ser Leu Phe Cys Tyr His Ile Val Met Val Phe Ile Phe Ile
 Ile Asn Tyr *** Val Phe Phe Val Ile Thr Ser *** Trp Phe Leu Phe Leu Phe
 *** Ile Thr Glu Ser Phe Leu Leu Ser His Arg Asn Gly Phe Tyr Phe Tyr Ser

 Lys Ser Pro Arg Glu Pro Tyr Ile Arg Gln Ile Thr Cys Leu Tyr Asp Val Lys
 Asn Leu Pro Asp Lys Leu Ile Phe Glu Arg Phe Gln Val Tyr Ile Thr Leu Arg
 Met *** Leu Thr Lys *** Ser Leu Asn Glu Ser Asn Tyr Met Phe Leu *** Gly
 GCA AAT CTC CCA GAA AGT CCT ATT TAA GAG ACT TAA CAT GTA TTT ATC AGT TGG
 1035 1044 1053 1062 1071 1080
 CAT TTA GAG GGT CTT TCA GGA TAA ATT CTC TGA ATT GTA CAT AAA TAG TCA ACC
 His Leu Glu Gly Leu Ser Gly *** Ile Leu *** Ile Val His Lys *** Ser Thr
 Ile *** Arg Val Phe Gln Asp Lys Phe Ser Glu Leu Tyr Ile Asn Ser Gln Pro
 Phe Arg Gly Ser Phe Arg Ile Asn Ser Leu Asn Cys Thr *** Ile Val Asn Leu

FIGURE 2 (continuation 3)

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Gly Cys Leu Lys Pro Ser His Asn Cys Lys Pro Ala Cys Leu Gly Pro Arg His
 Val Val Tyr Asn Gln Ala Thr Thr Ala Asn Gln Leu Ala Tyr Gly Leu Gly Thr
 *** Trp Met Ile Lys Pro Gln Pro Gln Met Lys Ser Arg Met Ala Trp Ala Gln

 AAT GGT GTA TTA AAA CCC GAC ACC AAC GTA AAA CCT CGG GTC TCG GGT CCG GAC
 1089 1098 1107 1116 1125 1134
 TTA CCA CAT AAT TTT GGG CTG TGG CAT TTT GGA GCG CAT AGC CCA GGC CTG
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Leu Pro His Asn Phe Gly Leu Trp Leu His Phe Gly Ala His Ser Pro Gly Leu
 Tyr His Ile Ile Leu Gly Cys Gly Cys Ile Leu Glu Arg Ile Ala Gln Ala Cys
 Thr Thr *** Phe Trp Ala Val Val Ala Phe Trp Ser Ala *** Pro Arg Pro Val
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Ala Arg Cys Gln His Pro Tyr Lys Phe Pro Ala Val Ala Pro Lys Lys ***
 His Glu Val Asn Thr His Thr Asn Leu His Leu Trp Leu Gln Asn Arg Lys Asn
 Thr Ser Ser Met Pro Thr Pro Ile *** Ile Ser Gly Cys Ser Thr Glu Lys Ile
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 ACA CGA GCT GTA ACC ACA CCC ATA AAT TTA CCT CGG TGT CGA CCA AAG AAA ATA
 1143 1152 1161 1170 1179 1188
 TGT GCT CGA CAT TGG TGT GGG TAT TTA AAT GGA GGC ACA GCT GGT TTC TTT TAT
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Cys Ala Arg His Trp Cys Gly Tyr Leu Asn Gly Ala Thr Ala Gly Phe Phe Tyr
 Val Leu Asp Ile Gly Val Gly Ile *** Met Glu Pro Gln Leu Val Ser Phe Ile
 Cys Ser Thr Leu Val Trp Val Phe Lys Trp Ser His Ser Trp Phe Leu Leu
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Lys Ala Pro Val Leu *** Asn Asn Pro Arg Ala Arg Thr Gln Pro His Leu Val
 Asn Pro Gln Phe Trp Asp Ile Thr Gln Asp Leu Glu Pro Lys Pro Thr Phe Tyr
 Ile Gln Ser Ser Gly Ile Leu Gln Lys Thr *** Ser Gln Asn Pro Pro Ser Thr
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 ATA AAC CGA CCT TGG TTA GTT AAC AAA CCA GAT CGA GAC CAA ACC CCC ACT TCA
 1197 1206 1215 1224 1233 1242
 TAT TTG GCT GGA ACC AAT CAA TTG TTT GGT CTA GCT CTG GTT TGG GGG TGA AGT
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Tyr Leu Ala Gly Thr Asn Gln Leu Phe Gly Leu Ala Leu Val Trp Gly *** Ser
 Ile Trp Leu Glu Pro Ile Asn Cys Leu Val *** Leu Trp Phe Gly Gly Glu Val
 Phe Gly Trp Asn Gln Ser Ile Val Trp Ser Ser Gly Leu Gly Val Lys Tyr
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Gln Leu Pro Leu Tyr Leu Ala Ala Lys His His Pro Pro Leu Leu Leu *** Tyr
 Arg Ser His Tyr Thr Phe Pro Gln Arg Ile Thr His Arg Ser Ser Tyr Asn Ile
 Gly Pro Thr Thr Pro Leu Pro Ser Gly *** Pro Thr Ala Pro Pro Thr Thr Leu
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 TGG ACC TCA CCA TCC ATT TCC CGA CGG AAT ACC ACA CCG CCC TCC TCA TCA ATT
 1251 1260 1269 1278 1287 1296
 ACC TGG AGT GGT AGG TAA AGG GCT GCC TTA TGG TGT GGC GGG AGG AGT AGT TAA
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Thr Trp Ser Gly Arg *** Arg Ala Ala Leu Trp Cys Gly Gly Arg Ser Ser ***
 Pro Gly Val Val Gly Lys Gly Leu Pro Tyr Gly Val Ala Gly Gly Val Val Asn
 Leu Glu Trp *** Val Lys Gly Cys Leu Met Val Trp Arg Glu Glu *** Leu Ile
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Leu Pro *** Leu Gly Leu Gln His Leu Pro Asn Cys Leu Gln Cys Gly Leu Tyr
 Tyr Pro Asp Tyr Ala Leu Asn Thr Ser Pro Thr Val Phe Asn Ala Asp Leu Ile
 Ile Pro Thr Met Pro Trp Thr Pro Pro Pro *** Leu Thr Pro Met Trp Ser
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 ATA TCC CCA GTA TCC GGT TCA ACC ACC TCC CCC AAT GTT TCA ACC GTA GGT TCT
 1305 1314 1323 1332 1341 1350
 TAT AGG GGT CAT AGG CCA AGT TGG TGG AGG GGG TTA CAA AGT TGG CAT CCA AGA
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Tyr Arg Gly His Arg Pro Ser Trp Trp Arg Gly Leu Gln Ser Trp His Pro Arg
 Ile Gly Val Ile Gly Gln Val Gly Gly Gly Tyr Lys Val Gly Ile Gln Asp
 *** Gly Ser *** Ala Lys Leu Val Glu Gly Val Thr Lys Leu Ala Ser Lys Ile

FIGURE 2 (continuation 4)

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Cys Cys His Val Trp Cys Arg Lys Ser *** Leu His His Pro Arg Gln Pro Leu
 Val Val Thr Ser Gly Val Gly Arg Gln Asn Ser Thr Ile Pro Asp Arg Pro Tyr
 Leu Leu Leu Pro Gly Leu Val Glu Lys Ile Leu Pro Ser Pro Thr Glu Pro Thr
 ATT GTT GTC ACC TGG GTG GAG AAA CTA ATC TCC ACT ACC CCA GAG ACC CCA
 1359 1368 1377 1386 1395 1404
 TAA CAA CAG TGG ACC CAA CAC CTC TTT GAT TAG AGG TGA TGG GGT CTC TGG GGT
 *** Gln Gln Trp Thr Gln His Leu Phe Asp *** Arg *** Trp Gly Leu Trp Gly
 Asn Asn Ser Gly Pro Asn Thr Ser Leu Ile Arg Gly Asp Gly Val Ser Gly Val
 Thr Thr Val Asp Pro Thr Pro Leu *** Leu Glu Val Met Gly Ser Leu Gly ***

 Ile *** Ile *** Gly Lys *** Tyr Pro Leu Ile Pro Phe Thr Pro Thr Pro Pro
 Phe Glu Tyr Lys Ala Lys Arg Ile Arg Tyr Tyr Gln Phe Pro Leu Pro Leu Pro
 Phe Asn Met Asn Leu Arg Glu Leu Val Thr Thr Asn Ser Leu Tyr Pro Tyr Pro
 TTT TAA GTA TAA ATC GGA AAG ATT ATG CCA TCA TAA CCT TTC CAT CCC CAT CCC
 1413 1422 1431 1440 1449 1458
 AAA ATT CAT ATT TAG CCT TTC TAA TAC GGT AGT ATT GGA AAG GTA GGG GTA GGG
 *** Lys Ile His Ile *** Pro Phe *** Tyr Gly Ser Ile Gly Lys Val Gly Val Gly
 Lys Phe Ile Phe Ser Leu Ser Asn Thr Val Val Leu Glu Arg *** Gly *** Gly
 Asn Ser Tyr Leu Ala Phe Leu Ile Arg *** Tyr Trp Lys Gly Arg Gly Arg Gly

 Gln His Arg Arg Leu Pro Pro Pro Val Pro Arg His Gln Ile Glu Ala Arg ***
 Asn Thr Gly Gly Ser Pro Pro Leu Phe Gln Gly Ile Asn Phe Arg Leu Glu Asn
 Thr Pro Ala Ala Gln Pro Pro Ser Ser Ala Ser Thr Ser Asp *** Ser Thr
 CCA ACC ACG GCG GAC TCC CCC CCT CCT TGA CCG GCT ACA ACT TAG AGT CGA GCA
 1467 1476 1485 1494 1503 1512
 GGT TGG TGC CGC CTG AGG GGG GGA ACT GGC CGA TGT TGA ATC TCA GCT CGT
 Gly Trp Cys Arg Leu Arg Gly Gly Thr Gly Arg Cys *** Ile Ser Ala Arg
 Val Gly Ala Ala *** Gly Gly Glu Leu Ala Asp Val Glu Ser Gln Leu Val
 Leu Val Pro Pro Glu Gly Arg Asn Trp Pro Met Leu Asn Leu Ser Ser Leu

 Cys Glu Leu Ile Ala Ala Leu Thr Arg Arg Lys His His Thr Cys Ile Arg ***
 Val Asn Trp Ser Pro Gln Ser His Gly Gly Arg Ile Thr Leu Val Phe Glu Arg
 Leu Met Gly Leu His Ser Arg Thr Asp Glu Glu *** Pro Ser Tyr Leu Asn Glu
 ATT GTA AGG TTC TAC CGA CGC TCA CAG GAG AAT ACC ACT CAT GTT TAA GAG
 1521 1530 1539 1548 1557 1566
 TAA CAT TCC AAG ATG GCT GCG AGT GTC CTC CTC TTA TGG TGA GTA CAA ATT CTC
 *** His Ser Lys Met Ala Ala Ser Val Leu Leu Leu Trp *** Val Gln Ile Leu
 Asn Ile Pro Arg Trp Leu Arg Val Ser Ser Tyr Gly Glu Tyr Lys Phe Ser
 Thr Phe Gln Asp Gly Cys Pro Pro Leu Met Val Ser Thr Asn Ser Leu

 Phe Pro Pro Phe Gln Leu Tyr Gly Asp Lys Pro Ala Met Gln Leu Pro Lys Gln
 Ser Leu Arg Ser Asn Phe Ile Gly Thr Lys Arg Arg Trp Arg Tyr Arg Asn Arg
 Leu Phe Ala Pro Ile Ser Ser Val Arg Arg Glu Ala Gly Asp Thr Val Thr Glu
 ATC TTT CCG CCC TTA ACT TCT ATG GGC AGA AAG CCG CGG TAG ACA TTG CCA AAG
 1575 1584 1593 1602 1611 1620
 TAG AAA GGC GGG AAT TGA AGA TAC CCG TCT TTC GGC GCC ATC TGT AAC GGT TTC
 *** Lys Gly Gly Asn *** Arg Tyr Pro Ser Phe Gly Ala Ile Cys Asn Gly Phe
 Arg Lys Ala Gly Ile Glu Asp Thr Arg Leu Ser Ala Pro Ser Val Thr Val Ser
 Glu Arg Arg Glu Leu Lys Ile Pro Val Phe Arg Arg His Leu *** Arg Phe Leu

FIGURE 2 (continuation 5)

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Leu Arg Pro Thr Gly Phe Ile Thr Lys Glu Pro Pro His Lys Trp Ser Pro Gln
 Phe Ala Pro His Val Leu Tyr Pro Arg Arg Arg Leu Ile Asn Gly Leu His Ser
 Ser Pro Pro Thr Tyr Trp Ile His Asp Glu Gly Ser Ser Thr Glu Leu Ile Ala

 ACT TCC GCC CCA CAT GGT TTA TAC CAG AAG AGG CCT CCT ACA BAG GTT CTA CCG
 1629 1638 1647 1656 1665 1674
 TGA AGG CGG GGT GTA CCA AAT ATG GTC TTC TCC GGA GGA TGT TTC CAA GAT GGC
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 *** Arg Arg Gly Val Pro Asn Met Val Phe Ser Gly Gly Cys Phe Gln Asp Gly
 Glu Gly Gly Val Tyr Gln Ile Trp Ser Ser Pro Glu Asp Val Ser Lys Met Ala
 Lys Ala Gly Cys Thr Lys Tyr Gly Leu Leu Arg Arg Met Phe Pro Arg Trp Leu

Pro Pro Pro Asp Thr Lys Gln Pro Leu Ala Glu Lys Ala Val Asp Asp *** Leu
 Arg Pro Arg Thr Arg Arg Arg Tyr Arg Arg Arg Pro Trp Thr Met Arg Tyr
 Ala Pro Ala Pro Gly Asp Glu Ala Thr Val Gly Gly Gln Gly Arg *** Gly Ile
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 ACG CCC CCC AGG CAG AAG ACG CCA TTG CGG AGG AAC CGG TGC AGT AGG ATA
 1683 1692 1701 1710 1719 1728
 TGC GGG GGC GGG TCC GTC TTC TGC GGT AAC GGC TCC TTG GCC ACG TCA TCC TAT
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Cys Gly Gly Gly Ser Val Phe Cys Gly Asn Ala Ser Leu Ala Thr Ser Ser Tyr
 Ala Gly Ala Gly Pro Ser Ser Ala Val Thr Pro Pro Trp Pro Arg His Pro Ile
 Arg Gly Arg Val Arg Leu Leu Arg *** Arg Leu Leu Gly His Val Ile Leu ***

Leu Ser Leu Leu Ala Ser Ser Tyr Tyr
 Phe His Phe Phe His Ala Ala Thr Thr Asn
 Phe Thr Phe Ser Thr Arg Gln Gln Leu Ile
 --- --- --- --- --- --- --- --- --- ---
 TTT TCA CTT TCT TCA CGC GAC GAC ATC ATA A 5'
 1737 1746 1755
 AAA AGT GAA AGA AGT GCG CTG CTG TAG TAT T 3'
 --- --- --- --- --- --- --- --- --- ---
 Lys Ser Glu Arg Ser Ala Leu Leu *** Tyr
 Lys Val Lys Glu Val Arg Cys Cys Ser Ile
 Lys *** Lys Lys Cys Ala Ala Val Val

FIGURE 2 (continuation 6)

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circopormank	1	10	20	30	40	50	
circopormeeh	1	ACCAGCGCAC	TCGGCAGCG	GCAGCACCTC	GGAGCGTCA	STGAAAATGC	50
circopordfp	1	ACCAGCGCAC	TCGGCAGCG	GCAGCACCTC	GGAGCGTCA	STGAAAATGC	50
circopormank	51	60	70	80	90	100	
circopormeeh	51	CAAGCAAGAA	AGCGGGCCCG	CAACCCATA	AGAGGTGGGT	TTCAACCTT	100
circopordfp	51	CAAGCAAGAA	AGCGGGCCCG	CAACCCATA	AGAGGTGGGT	TTCAACCTT	100
circopormank	101	110	120	130	140	150	
circopormeeh	101	ATAATCCTT	CGAGGAGGA	AAAAACAAA	ATACGGGAGC	TCACATCTC	150
circopordfp	101	ATAATCCTT	CGAGGAGGA	AAAAACAAA	ATACGGGAGC	TCACATCTC	150
circopormank	151	160	170	180	190	200	
circopormeeh	151	CTTTTGAT	TATTTGTTT	CGGGAGAGGA	AGGTTTGAA	GAGGGTAGAA	200
circopordfp	151	CTTTTGAT	TATTTGTTT	CGGGAGAGGA	AGGTTTGAA	GAGGGTAGAA	200
circopormank	201	210	220	230	240	250	
circopormeeh	201	CTCTCACCT	CAAGGGTTT	CGAATTTTG	TAAGAAGCA	ACTTTAAC	250
circopordfp	201	CTCTCACCT	CAAGGGTTT	CGAATTTTG	TAAGAAGCA	ACTTTAAC	250
circopormank	251	260	270	280	290	300	
circopormeeh	251	AGGTGAAGT	GTATTTGG	TGCCCGCTGC	CACATCGAGA	AAGCGAAAGG	300
circopordfp	251	AGGTGAAGT	GTATTTGG	TGCCCGCTGC	CACATCGAGA	AAGCGAAAGG	300
circopormank	301	310	320	330	340	350	
circopormeeh	301	ACCGACCAG	CAGATAAAG	ATACTGCAG	AAAGAAGGC	CACATACCTA	350
circopordfp	301	ACCGACCAG	CAGATAAAG	ATACTGCAG	AAAGAAGGC	CACATACCTA	350
circopormank	351	360	370	380	390	400	
circopormeeh	351	TCGAGTGTGG	GCCTCCGGGG	ACCAAGGGGG	GGCGCAGCGA	CTGTCTACT	400
circopordfp	351	TCGAGTGTGG	GCCTCCGGGG	ACCAAGGGGG	GGCGCAGCGA	CTGTCTACT	400
circopormank	401	410	420	430	440	450	
circopormeeh	401	CTGTGAGTA	CCCTTTGG	ACGGGGGTCT	TGGTGACTG	TAGCCGAGCA	450
circopordfp	401	CTGTGAGTA	CCCTTTGG	ACGGGGGTCT	TGGTGACTG	TAGCCGAGCA	450
circopormank	451	460	470	480	490	500	
circopormeeh	451	CTTCCCTGTA	ACGTATGTGA	AAATTTCG	GGGCTGGCT	AACTTTGGA	500
circopordfp	451	CTTCCCTGTA	ACGTATGTGA	AAATTTCG	GGGCTGGCT	AACTTTGGA	500
circopormank	501	510	520	530	540	550	
circopormeeh	501	AGTGAGCGG	AAAGATGCAG	CAGCGTGATT	GGAAAGACAGC	TGTACACGTC	550
circopordfp	501	AGTGAGCGG	AAAGATGCAG	CAGCGTGATT	GGAAAGACAGC	TGTACACGTC	550
circopormank	551	560	570	580	590	600	
circopormeeh	551	ATAGTGGGCC	GGCGGGTTG	TGGGAAGAGC	AGTGGGCC	TAATTTGC	600
circopordfp	551	ATAGTGGGCC	GGCGGGTTG	TGGGAAGAGC	AGTGGGCC	TAATTTGC	600

FIGURE 3

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circopormank	601	TGAGCCTAGC	610	GACACCTACT	620	GGAAAGCCTAG	630	TAGAAAATAAG	640	TGGTGGGATG	650
circopormeeh	601	TGAGCCTAGG		GACACCTACT		GGAAAGCCTAG		TAGAAAATAAG		TGGTGGGATG	650
circopordfp	601	TGAGCCTAGG		GACACCTACT		GGAAAGCCTAG		TAGAAAATAAG		TGGTGGGATG	650
circopormank	651	GATATCATGG	660	AGAAGAAAGTT	670	TTTGTGTTGG	680	ATGATTTTTA	690	TGGCTGGTTA	700
circopormeeh	651	GATATCATGG		AGAAGAAAGTT		TTTGTGTTGG		ATGATTTTTA		TGGCTGGTTA	700
circopordfp	651	GATATCATGG		AGAAGAAAGTT		TTTGTGTTGG		ATGATTTTTA		TGGCTGGTTA	700
circopormank	701	SCTTGGGATG	710	ATCTACTGAG	720	ACTGTGTGAC	730	CGGTATCCAT	740	TGACTGTAGA	750
circopormeeh	701	SCTTGGGATG		ATCTACTGAG		ACTGTGTGAC		CGGTATCCAT		TGACTGTAGA	750
circopordfp	701	SCTTGGGATG		ATCTACTGAG		ACTGTGTGAC		CGGTATCCAT		TGACTGTAGA	750
circopormank	751	GACTAAAGG	760	GGTACTGTTC	770	TTTTTTGGC	780	TGGCAGTATT	790	TGATTACCA	800
circopormeeh	751	GACTAAAGG		GGTACTGTTC		TTTTTTGGC		TGGCAGTATT		TGATTACCA	800
circopordfp	751	GACTAAAGG		GGTACTGTTC		TTTTTTGGC		TGGCAGTATT		TGATTACCA	800
circopormank	801	GCAATCAGGC	810	CCCCCAGGAA	820	TGGTACTCCT	830	CAACTGCTGT	840	CCCAGCTGTA	850
circopormeeh	801	GCAATCAGGC		CCCCCAGGAA		TGGTACTCCT		CAACTGCTGT		CCCAGCTGTA	850
circopordfp	801	GCAATCAGGC		CCCCCAGGAA		TGGTACTCCT		CAACTGCTGT		CCCAGCTGTA	850
circopormank	851	GAAGCTCTCT	860	ATCGGAGGGAT	870	TACTACTTTG	880	CAATTTTGG	890	AGACTGCTGG	900
circopormeeh	851	GAAGCTCTCT		ATCGGAGGGAT		TACTACTTTG		CAATTTTGG		AGACTGCTGG	900
circopordfp	851	GAAGCTCTCT		ATCGGAGGGAT		TACTACTTTG		CAATTTTGG		AGACTGCTGG	900
circopormank	901	AGAACAAATCA	910	ACGGAGGTAC	920	CCGAAGGCCG	930	TTTGAAGCA	940	GTGGACCCAC	950
circopormeeh	901	AGAACAAATCC		ACGGAGGTAC		CCGAAGGCCG		TTTGAAGCA		GTGGACCCAC	950
circopordfp	901	AGAACAAATCC		ACGGAGGTAC		CCGAAGGCCG		TTTGAAGCA		GTGGACCCAC	950
circopormank	951	CTGTGCCCC	960	TTTCCCATAT	970	AAAATAAATT	980	TCTGAGTCT	990	TTTGTATC	1000
circopormeeh	951	CTGTGCCCC		TTTCCCATAT		AAAATAAATT		TCTGAGTCT		TTTGTATC	1000
circopordfp	951	CTGTGCCCC		TTTCCCATAT		AAAATAAATT		TCTGAGTCT		TTTGTATC	1000
circopormank	1001	ACATCGTAAT	1010	GGTTTTTATT	1020	TTTATTATT	1030	TAGAGGGTCT	1040	TTAGGATAAA	1050
circopormeeh	1001	ACATCGTAAT		GGTTTTTATT		TTTATTATT		TAGAGGGTCT		TTAGGATAAA	1050
circopordfp	1001	ACATCGTAAT		GGTTTTTATT		TTTATTATT		TAGAGGGTCT		TTAGGATAAA	1050
circopormank	1051	ATTCCTCTGAA	1060	TTGTACATAA	1070	ATAGTCAGCC	1080	TTACCAACATA	1090	ATTTTGGGCT	1100
circopormeeh	1051	ATTCCTCTGAA		TTGTACATAA		ATAGTCAGCC		TTACCAACATA		ATTTTGGGCT	1100
circopordfp	1051	ATTCCTCTGAA		TTGTACATAA		ATAGTCAGCC		TTACCAACATA		ATTTTGGGCT	1100
circopormank	1101	GTGGCTGCAT	1110	TTGGAGCGC	1120	ATAGCCGAGG	1130	CTGTGTGCT	1140	CGACATTGGT	1150
circopormeeh	1101	GTGGCTGCAT		TTGGAGCGC		ATAGCCGAGG		CTGTGTGCT		CGACATTGGT	1150
circopordfp	1101	GTGGCTGCAT		TTGGAGCGC		ATAGCCGAGG		CTGTGTGCT		CGACATTGGT	1150
circopormank	1151	GTGGGTATTT	1160	AAATGGAGCC	1170	ACAGCTGGTT	1180	TCCTTTATTA	1190	TTTGGGTGGA	1200
circopormeeh	1151	GTGGGTATTT		AAATGGAGCC		ACAGCTGGTT		TCCTTTATTA		TTTGGGTGGA	1200
circopordfp	1151	GTGGGTATTT		AAATGGAGCC		ACAGCTGGTT		TCCTTTATTA		TTTGGGTGGA	1200

FIGURE 3 (continuation 1)

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circopormank	1201	ACCAATCAAT	1210	TGTTGGTCC	1220	AGCTCAGGTT	1230	TGGGGGTGAA	1240	GTACCTGGAG	1250
circopormeeh	1301	ACCAATCAAT		TGTTGGTCC		AGCTCAGGTT		TGGGGGTGAA		GTACCTGGAG	1250
circopordfp	1201	ACCAATCAAT		TGTTGGTCT		AGCTCAGGTT		TGGGGGTGAA		GTACCTGGAG	1250
circopormank	1251	TGGTAGGTAA	1260	AGGGCTGCCT	1270	FATGGTGTGG	1280	CGGGAGGAGT	1290	AGTTAATATA	1300
circopormeeh	1251	TGGTAGGTAA		AGGGCTGCCT		FATGGTGTGG		CGGGAGGAGT		AGTTAATATA	1300
circopordfp	1251	TGGTAGGTAA		AGGGCTGCCT		FATGGTGTGG		CGGGAGGAGT		AGTTAATATA	1300
circopormank	1301	GGGGTCATAG	1310	SCCAAGTTGG	1320	TGGAGGGGGT	1330	TACAAAAGTTG	1340	GCATCCAAGA	1350
circopormeeh	1301	GGGGTCATAG		SCCAAGTTGG		TGGAGGGGGT		TACAAAAGTTG		GCATCCAAGA	1350
circopordfp	1301	GGGGTCATAG		SCCAAGTTGG		TGGAGGGGGT		TACAAAAGTTG		GCATCCAAGA	1350
circopormank	1351	TAACAAACAGT	1360	GGACCCAACA	1370	CCTCTTTGAT	1380	TAGAGGTGAT	1390	GGGGTCTCTG	1400
circopormeeh	1351	TAACAAACAGT		GGACCCAACA		CCTCTTTGAT		TAGAGGTGAT		GGGGTCTCTG	1400
circopordfp	1351	TAACAAACAGT		GGACCCAACA		CCTCTTTGAT		TAGAGGTGAT		GGGGTCTCTG	1400
circopormank	1401	GGGTAAAATT	1410	TATATTTAGC	1420	TTTCTAATA	1430	CGGTAGTATT	1440	GGAAAGGTAG	1450
circopormeeh	1401	GGGTAAAATT		TATATTTAGC		TTTCTAATA		CGGTAGTATT		GGAAAGGTAG	1450
circopordfp	1401	GGGTAAAATT		TATATTTAGC		TTTCTAATA		CGGTAGTATT		GGAAAGGTAG	1450
circopormank	1451	GGGTAGGGGG	1460	TTGGTGCCTC	1470	CTGAGGGGGG	1480	TAGGAACTGG	1490	CCGATGTTGA	1500
circopormeeh	1451	GGGTAGGGGG		TTGGTGCCTC		CTGAGGGGGG		TAGGAACTGG		CCGATGTTGA	1500
circopordfp	1451	GGGTAGGGGG		TTGGTGCCTC		CTGAGGGGGG		TAGGAACTGG		CCGATGTTGA	1500
circopormank	1501	ATCTGAGGTG	1510	TTAACATTC	1520	CAAGATGGCT	1530	CGAGTATCC	1540	TCCTTTATG	1550
circopormeeh	1501	ATCTGAGGTG		TTAACATTC		CAAGATGGCT		CGAGTATCC		TCCTTTATG	1550
circopordfp	1501	ATCTGAGGTG		TTAACATTC		CAAGATGGCT		CGAGTATCC		TCCTTTATG	1550
circopormank	1551	GTGATGACAA	1560	ATTCTGAGA	1570	TAGA	1580	TTGAAGATAC	1590	CCGTCTTTCG	1600
circopormeeh	1551	GTGAGTACAA		ATTCTGAGA		TAGA		TTGAAGATAC		CCGTCTTTCG	1600
circopordfp	1551	GTGAGTACAA		ATTCTGAGA		TAGA		TTGAAGATAC		CCGTCTTTCG	1600
circopormank	1601	GGGCCATCTG	1610	TAACGGTTTC	1620	TGAAGGGGGG	1630	STGTGCCAAA	1640	FATGGTCTTC	1650
circopormeeh	1601	GGGCCATCTG		TAACGGTTTC		TGAAGGGGGG		STGTGCCAAA		FATGGTCTTC	1650
circopordfp	1601	GGGCCATCTG		TAACGGTTTC		TGAAGGGGGG		STGTGCCAAA		FATGGTCTTC	1650
circopormank	1651	TCCGGAGGAT	1660	TTTCCAAGA	1670	TGGCTGCCGGG	1680	TGGCTGCCGGG	1690	TCTTCTGGGG	1700
circopormeeh	1651	TCCGGAGGAT		TTTCCAAGA		TGGCTGCCGGG		TGGCTGCCGGG		TCTTCTGGGG	1700
circopordfp	1651	TCCGGAGGAT		TTTCCAAGA		TGGCTGCCGGG		TGGCTGCCGGG		TCTTCTGGGG	1700
circopormank	1701	TAACGCCCTCC	1710	TTGGCCACGT	1720	CATCCTATAA	1730	AAGTGAAGAGA	1740	AGTGGCGTGC	1750
circopormeeh	1701	TAACGCCCTCC		TTGGCCACGT		CATCCTATAA		AAGTGAAGAGA		AGTGGCGTGC	1750
circopordfp	1701	TAACGCCCTCC		TTGGCCACGT		CATCCTATAA		AAGTGAAGAGA		AGTGGCGTGC	1750
circopormank	1751	TGTAGTATT	1760	.....	1770	.....	1780	.....	1790	.....	1800
circopormeeh	1751	TGTAGTATT		.....		.....		.....		.....	1800
circopordfp	1751	TGTAGTATT		.....		.....		.....		.....	1800

FIGURE 3 (continuation 2)

circopormank	10	IPSKKSGPQP	HKRWVFTLNN	PSEEKNKIR	ELPISLFOYF	VCGEEGLEEG	50
circopormeeh	1	IPSKKSGPQP	HKRWVFTLNN	PSEEKNKIR	ELPISLFOYF	VCGEEGLEEG	50
circopordfp[	1	IPSKKSGPQP	HKRWVFTLNN	PSEEKNKIR	ELPISLFOYF	VCGEEGLEEG	50
circopormank	60	RTAHLQGFAN	FAKKQTFNKV	KWYFGARCHI	EAKGTOQQN	KEYCSKEGHI	100
circopormeeh	51	RTPHLQGFAN	FAKKQTFNKV	KWYFGARCHI	EAKGTOQQN	KEYCSKEGHI	100
circopordfp[	51	RTPHLOGFAN	FAKKQTFNKV	KWYFGARCHI	EAKGTOQQN	KEYCSKEGHI	100
circopormank	110	LIECGAPRNQ	GKRSOLSTAV	STLEETGSLV	TVAEQFPVTY	VRNFRGLAEL	150
circopormeeh	101	LIECGAPRNQ	GKRSOLSTAV	STLEETGSLV	TVAEQFPVTY	VRNFRGLAEL	150
circopordfp[	101	LIECGAPRNQ	GKRSOLSTAV	STLEETGSLV	TVAEQFPVTY	VRNFRGLAEL	150
circopormank	160	IKVSGKMQQR	DWKTAVHVIV	GPPGCGKSQLW	ARNFAEPSDT	WPKPSRNKIIW	200
circopormeeh	151	IKVSGKMQQR	DWKTAVHVIV	GPPGCGKSQLW	ARNFAEPROT	WPKPSRNKIIW	200
circopordfp[	151	IKVSGKMQQR	DWKTAVHVIV	GPPGCGKSQLW	ARNFAEPROT	WPKPSRNKIIW	200
circopormank	210	DGYHGEEVVV	DDFYGWLPIW	DOLLRLCDRY	PLTVETKGGT	VPFLARSIL	250
circopormeeh	201	DGYHGEEVVV	DDFYGWLPIW	DOLLRLCDRY	PLTVETKGGT	VPFLARSIL	250
circopordfp[	201	DGYHGEEVVV	DDFYGWLPIW	DOLLRLCDRY	PLTVETKGGT	VPFLARSIL	250
circopormank	260	TSNQAPQEWY	SSTAVPAVEA	LYRRIITLQF	WKTAGEQSTE	VPEGRFEAVD	300
circopormeeh	251	TSNQAPQEWY	SSTAVPAVEA	LYRRIITLQF	WKTAGEQSTE	VPEGRFEAVD	300
circopordfp[	251	TSNQAPQEWY	SSTAVPAVEA	LYRRIITLQF	WKTAGEQSTE	VPEGRFEAVD	300
circopormank	310	PPCALFPYKI	NY	.....	.....	.....	350
circopormeeh	301	PPCALFPYKI	NY	350
circopordfp[301	PPCALFPYKI	NY	350

FIGURE 4

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circopormank	1	MTWPRRRYRR	RRTRPRSHLG	ILRRRPPYLA	HPAFRNRYRW	RRKTGIFNSR	50
circopormeeh	1	MTWPRRRYRR	RRTRPRSHLG	ILRRRPPYLA	HPAFRNRYRW	RRKTGIFNSR	50
circopordfp[	1	MTWPRRRYRR	RRTRPRSHLG	ILRRRPPYLV	HPAFRNRYRW	RRKTGIFNSR	50
circopormank	51	SKEFVLTIK	GGYSQPSWIV	ILRFNIGQF	LPPSGGTNPL	PLPFQYYRIR	100
circopormeeh	51	SKEFVLTIK	GGYSQPSWNV	ILRFNIGQF	LPPSGGTNPL	PLPFQYYRIR	100
circopordfp[	51	SKEFVLTIK	GGYSQPSWNV	ILRFNIGQF	LPPSGGTNPL	PLPFQYYRIR	100
circopormank	101	KAKYEFYPRO	PITSNERGVG	STVVILOANF	VTPSTNLLAYD	PYINYSSRHT	150
circopormeeh	101	KAKYEFYPRO	PITSNQRGVG	STVVILOANF	VTPSTNLLAYD	PYINYSSRHT	150
circopordfp[	101	KAKYEFYPRO	PITSNQRGVG	STVVILOANF	VTPSTNLLAYD	PYINYSSRHT	150
circopormank	151	IRQPFTYHSR	YFTPKPELOQ	TIWFHPNNK	RNQLWLHLNT	HTNVEHTGLG	200
circopormeeh	151	IRQPFTYHSR	YFTPKPELOQ	TIWFHPNNK	RNQLWLHLNT	HTNVEHTGLG	200
circopordfp[	151	IRQPFTYHSR	YFTPKPELOQ	TIWFQOPNNK	RNQLWLHLNT	HTNVEHTGLG	200
circopormank	201	YALQNAATAQ	HYVVRLTIYV	QFREFILKOP	LNK	.....	250
circopormeeh	201	YALQNAATAQ	HYVVRLTIYV	QFREFILKOP	LNK	.....	250
circopordfp[	201	YALQNAATAQ	HYVVRLTIYV	QFREFILKOP	LNE	.....	250

FIGURE 5

circopormank	1	MISIPPLIST	RLPVGVARLS	KITGPLALPT	TGRAHYDVYS	CLPITLLHLP	50
circopormeeh	1	MISIPPLIST	RLPVGVPRLS	KITGPLALPT	TGRAHYDVYS	CLPITLLHLP	50
circopordfp[	1	MISIPPLIST	RLPVGVPRLS	KITGPLALPT	TGRAHYDVYS	CLPITLLHLP	50
circopormank	51	AHFQKFSQPA	EISHIRYREL	IGYSHQRPRL	QKGTHSSRQV	AALPLVPRSS	100
circopormeeh	51	AHFQKFSQPA	EISHIRYREL	IGYSHQRPRL	QKGTHSSRQV	AALPLVPRSS	100
circopordfp[	51	AHFQKFSQPA	EISHIRYRK	IGYSHQRPRL	QKGTHSSRQV	AALPLVPRSS	100
circopormank	101	FLDKYVAFFT	AVFFILLVGS	FRFLOVAAGT	KIPLHLVKSL	LLSKISKPLE	150
circopormeeh	101	FLDKYVAFFT	AVFFILLVGS	FRFLOVAAGT	KIPLHLVKSL	LLSKISKPLE	150
circopordfp[	101	FLDKYVAFFT	AVFFILLVGS	FRFLOVAAGT	KIPLHLVKSL	LLSKISKPLE	150
circopormank	151	VSSTLQFTF	LANKIIKKG	DWKLQYFVFL	LLGRIIKGEM	PPLMGLRAAF	200
circopormeeh	151	VSSTLQFTF	LANKIIKKG	DWKLQYFVFL	LLGRIIKGEH	PPLMGLRAAF	200
circopordfp[	151	VSSTLQFTF	LANKIIKKG	DWKLQYFVFL	LLGRIIKGEN	PPLMGLRAAF	200
circopormank	201	IAWHFM	.....	.....	.....	.....	250
circopormeeh	201	IAWHFM	250
circopordfp[201	IAWHFM	250

FIGURE 6

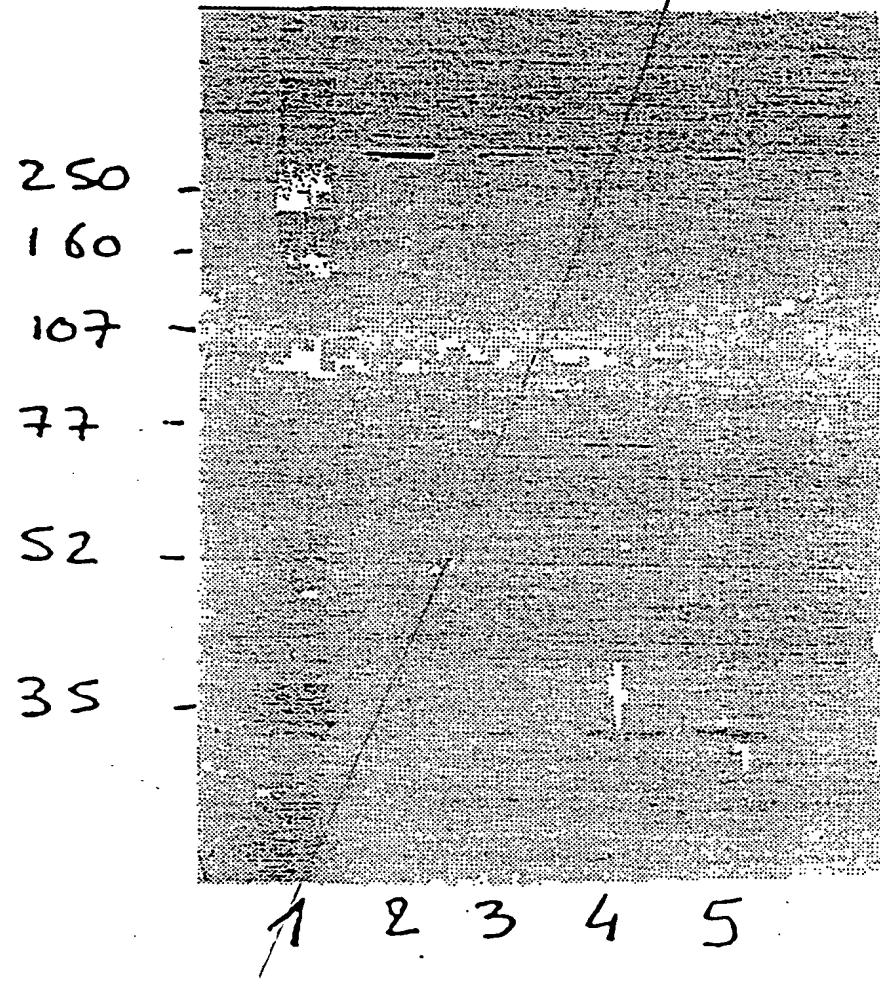


FIGURE 7
REPLACEMENT SHEET (RULE 26)

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Leu Ala Ser Arg Cys Arg Cys Arg Pro Leu Val Glu Ala Ala Val His Gly
 Trp Arg Val Glu Ala Ala Ala Gly Arg Cys Cys Arg Leu Leu Leu Met Gly
 Gly Ala Cys Lys Pro Leu Pro Leu Val Glu Ala Ala Gly ... Cys Cys Cys Ala

 3' TGG TCG CGT GAA CCC GTC CCC GTC GTG GAG CCG TCG TCG ACT CGT CGT TGT ACG
 9 18 27 36 45 54
 5' ACC ACC GCA CTT CGG CAG CGG CAG CAC CTC CGC ACC ACC TCA GCA GCA ACA TCC
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Thr Ser Ala Leu Arg Gln Arg Gln His Leu Gly Ser Thr Ser Ala Ala Thr Cys
 Pro Ala His Phe Gly Ser Gly Ser Thr Ser Ala Ala Pro Gln Gln Gln His Ala
 Gln Arg Thr Ser Ala Ala Ala Pro Arg Gln His Leu Ser Ser Asn Met Pro
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Ala Leu Leu Ile Ser Ser Ala Ser Gly Leu Gly Met Phe Pro Pro His Glu Ser
 Leu Leu Phe Phe Pro Leu Leu Pro Gly Trp Gly Trp Leu Leu His Thr Asn Val
 Trp Cys Ser Ser His Phe Phe Arg Val Gly Val Gly Tyr Phe Thr Pro Thr ...
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 GGT CGT TCT TCT TAC CTT CTT CCC CTG CGG TTG CGG TAT TTT CCA CCC ACA ACT
 63 72 81 90 99 108
 CCA GCA AGA AGA ATG GAA GAA CGG GAC CCC AAC CCC ATA AAA CGT GGG TGT TCA
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Pro Ala Arg Arg Met Glu Glu Ala Asp Pro Asn Pro Ile Lys Gly Gly Cys Ser
 Gln Gln Glu Glu Trp Lys Lys Arg Thr Pro Thr Pro ... Lys Val Gly Val His
 Ser Lys Lys Asn Gly Arg Ser Gly Pro Gln Pro His Lys Arg Trp Val Phe Thr
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Gln Ile Ile Arg Gly Phe Val Leu Ala Leu Phe Tyr Pro Ile Lys Trp Tyr Gly
 Arg Phe Leu Gly Glu Ser Ser Arg Leu Phe Ile Arg Ser Arg Gly Ile Asp
 Glu Ser Tyr Asp Lys Arg Leu Arg Ala Cys Ser Phe Val Pro Asp Glu Leu Ile
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 GAG ACT TAT TAG GAA CCC TTC TGC TCG CGT TCT TTT ATG CCC TAG AAG GTT ATA
 117 126 135 144 153 162
 CTC TGA ATA ATC CTT CCG AAG ACC GCA AGA AAA TAC CGG ATC TTC CAA TAT
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Leu ... Ile Ile Leu Pro Lys Thr Ser Ala Arg Lys Tyr Gly Ile Phe Gln Tyr
 Ser Glu ... Ser Phe Arg Arg Ala Gln Glu Asn Thr Gly Ser Ser Asn Ile
 Leu Asn Asn Pro Ser Glu Asp Glu Arg Lys Ile Arg Asp Leu Pro Ile Ser
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 ... Lys Ile Ile Lys Asn Asn Ala Leu Leu Thr Ile Leu Phe Ser Ser Cys Arg
 Arg Asn Ser ... Lys Ile Thr Pro Ser Ser Pro Leu Ser Ser Pro Arg Val Gly
 Gly Ile Gln Asn Asn ... Gln Gln Arg Pro Pro Tyr His Pro Leu Val Phe Val
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 GGG ATA AAC TAA TAA AAT AAC AAC CGG TCC TCC CAT TAC TCC TTC CTG CTT GTG
 171 180 189 198 207 216
 CCC TAT TTG ATT ATT TTA TTG TTG CGG AGG AGG GTA ATG AGG AAG GAC GAA CAC
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Pro Tyr Leu Ile Ile Leu Leu Ala Arg Arg Val Met Arg Lys Asp Glu His
 Pro Ile ... Leu Phe Tyr Cys Trp Arg Gly Gly Gly Arg Thr Asn Thr
 Leu Phe Asp Tyr Phe Ile Val Gly Glu Gly Asn Glu Glu Gly Arg Thr Pro
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Val Glu Leu Pro Glu Ser Ile Lys His Leu Leu Leu Ser Lys Ile Phe His Leu
 ... Arg Trp Pro Asn Ala Leu Lys Thr Phe Phe Cys Val Lys Leu Leu Thr Phe
 Glu Gly Gly Pro Thr Arg ... Asn Gln Ser Ser Ala Ser Lys ... Tyr Leu Ser
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 GAG TGG AGG TCC CCA ACC GAT TAA AAC ACT TCT TCG TCT GAA AAT TAT TTC ACT
 225 234 243 252 261 270
 CTC ACC TCC ACC CGT TCG CTA ATT TTG TGA AGA ACC AGA CTT TTA ATA AAG TGA
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Leu Thr Ser Arg Gly Ser Leu Ile Leu ... Arg Ser Arg Leu Leu Ile Lys ...
 Ser Pro Pro Gly Val Arg ... Phe Cys Glu Glu Ala Asp Phe Ser Glu
 His Leu Gln Gly Phe Ala Asn Phe Val Lys Gln Thr Phe Asn Lys Val Lys

FIGURE 8

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Pro Ile Gln Thr Gly Ala Ala Val Asp Leu Phe Arg Phe Ser Cys Ile Leu Leu
 His Tyr Lys Pro Ala Arg Gln Trp Met Ser Phe Ala Phe Pro Val Ser *** Cys
 Thr Thr Asn Pro His Gly Ser Gly Cys Arg Ser Leu Ser Leu Phe Leu Asp Ala

 TCA CCA TAA ACC CAC GGG CGA CGG TGT ACC TCT TTC GCT TTC CTT GTC TAG TCG
 279 288 297 306 315 324
 AGT CGT ATT TGG GTG CCC GCT GCC ACA TCG AGA AAG CGA AAG GAA CAG ATC ACC
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Ser Gly Ile Trp Val Pro Ala Ala Thr Ser Arg Lys Arg Lys Glu Gln Ile Ser
 Val Val Phe Gly Cys Pro Leu Pro His Arg Glu Ser Glu Arg Asn Arg Ser Ala
 Trp Tyr Leu Gly Ala Arg Cys His Ile Glu Lys Ala Lys Gly Thr Asp Gln Gln

 Ile Phe Phe Val Ala Thr Phe Phe Ala Val *** Gln His Leu Thr Ser Ser Arg
 Phe Leu Ser Tyr Gln Leu Leu Ser Pro Leu Lys Ser Ile Ser His Pro Ala Gly
 Ser Tyr Leu Ile Ser Cys Tyr Leu Leu Cys Ser Val Ser Pro Thr His Leu Glu
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 TCT TAT TTC TTA TGA CGT CAT TTC CGT TGA ATG ACT ACC TCA CAC CTC GAG
 333 342 351 360 369 378
 AGA ATA AAG AAT ACT GCA GTA AAG AAG GCA ACT TAC TGA TGG AGT GTG GAG CTC
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Arg Ile Lys Asn Thr Ala Val Lys Lys Ala Thr Tyr *** Trp Ser Val Glu Leu
 Glu *** Arg Ile Leu Gln *** Arg Arg Gln Leu Thr Asp Gly Val Trp Ser Ser
 Asn Lys Glu Tyr Cys Ser Lys Glu Gly Asn Leu Met Glu Cys Gly Ala Pro

 Ser Arg Leu Ser Leu Pro Thr Val Gln Arg Ser Ser His Thr Gly Gln Gln Leu
 Leu Asp *** Pro Cys Arg Leu Ser Arg Asp Val Ala Thr Leu Val Lys Asn Ser
 *** Ile Glu Pro Val Val Ser His Gly Thr *** Gln Gln Ser Tyr Arg Thr Pro
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 GAT CTA GAG TCC CTG TTG CCT CAC TCG ACA GAT GAC GAC ACT CAT GGA ACA ACC
 387 396 405 414 423 432
 CTA GAT CTC AGG GAC AAC GGA GTG ACC TGT CTA CTG CTG TGA GTA CCT TGT TCG
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Leu Asp Leu Arg Asp Asn Gly Val Thr Cys Leu Leu Leu *** Val Pro Cys Trp
 *** Ile Ser Gly Thr Thr Glu *** Pro Val Tyr Cys Cys Glu Tyr Leu Val Gly
 Arg Ser Gln Gly Gln Arg Ser Asp Leu Ser Thr Ala Val Ser Thr Leu Leu Glu

 Ala Pro Thr Gln His Gly Asn Cys Leu Leu Val Arg Tyr Arg Lys Asp Ser Ile
 Leu Pro Leu Arg Thr Val Thr Ala Ser Cys Cys Gly Thr Val Asn Thr Leu Phe
 Ser Arg Ser Asp Pro Ser Arg Gln Leu Ala Gly Gln Leu Thr Gln *** Phe
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 TCT CCC CCT CAG ACC ACT GGC AAC GTC TCG TCG GAC ATT GCA AAC AGT CTT
 441 450 459 468 477 486
 AGA GCG GGA GTC TGG TGA CCG TTG CAG ACC ACC ACC CTG TAA CGT TTG TCA GAA
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Arg Ala Gly Val Trp *** Pro Leu Gln Ser Ser Thr Leu *** Arg Leu Ser Glu
 Glu Arg Glu Ser Gly Asp Arg Cys Arg Ala Ala Pro Cys Asn Val Cys Gln Lys
 Ser Gly Ser Leu Val Thr Val Ala Glu Gln His Pro Val Thr Phe Val Arg Asn

 Glu Ala Pro Gln Ser Phe Lys Gln Phe His Ala Pro Phe His Leu Leu Thr Ile
 Lys Arg Pro Ser Ala Ser Ser Lys Phe Thr Leu Pro Phe Ile Cys Phe Arg Ser
 Asn Gly Arg Ala Pro Gln Val Lys Ser Leu Ser Arg Ser Phe Ala Ser Ala His
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 TAA ACG CCC CCG ACC GAG TTG AAA ACT TTC ACT CGC CCT TTT ACG TCT TCG CAC
 495 504 513 522 531 540
 ATT TCC CGG GGC TCG CTG AAC TTT TGA AAG TGA CGG GGA AAA TGC AGA ACC GTG
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Ile Ser Ala Gly Trp Leu Asn Phe *** Lys *** Ala Gly Lys Cys Arg Ser Val
 Phe Pro Arg Ala Gly *** Thr Phe Glu Ser Glu Arg Glu Asn Ala Glu Ala ***
 Phe Arg Gly Leu Glu Leu Lys Val Ser Gly Lys Met Gln Lys Arg Asp

FIGURE 8 (continuation 1)

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Pro Leu Ser Ile Tyr Val Asn His Pro Trp Arg Pro Thr Thr Phe Ala Phe
 Gln Phe Val Leu Thr Cys Thr Met Thr Pro Gly Gly Pro His Pro Leu Leu Leu
 Asn Ser Ser *** His Val Arg *** Gln Pro Ala Val Gln Thr His Tyr Phe Cys

 TAA CCT TCT GAT TAC ATG TGC AGT AAC ACC CCG GTG GAC CCA CAC CAT TTT CGT
 549 558 567 576 585 594
 ATT GGA AGA CTA ATG TAC ACG TCA TTG TGG CCC CAC GTG CGT GTG GTA AAA CCA

 Ile Gly Arg Leu Met Tyr Thr Ser Leu Trp Gly His Leu Gly Val Val Lys Ala
 Leu Glu Asp *** Cys Thr Arg His Cys Gly Ala Thr Trp Val-Trp *** Lys Gln
 Trp Lys Thr Asn Val His Val Ile Val Gly Pro Pro Gly Cys Gly Lys Ser Lys

 Pro Ser Ser Ile Lys Cys Val Arg Phe Gly Cys Val Pro Phe Trp Arg Ser Val
 His Ala Ala Leu Lys Ala Ser Gly Ser Val Val Tyr Gln Phe Gly Gly Leu Phe
 Ile Pro Gln *** Asn Gln Leu Gly Pro Phe Trp Met Ser Ser Val Val *** Phe

 TTA CCC GAC GAT TAA AAC GTC TCG GCC TTT CGT GTA TGA CCT TTG GTG GAT CTT
 603 612 621 630 639 648
 AAT CGG CTG CTA ATT TTG CAG ACC CCG AAA CCA CAT ACT CGA AAC CAC CTA GAA

 Asn Gly Leu Leu Ile Leu Gln Thr Arg Lys Pro His Thr Gly Asn His Leu Glu
 Met Gly Cys *** Phe Cys Arg Pro Gly Asn His Ile Leu Glu Thr Thr *** Lys
 Trp Ala Ala Asn Phe Ala Asp Pro Glu Thr Thr Tyr Trp Lys Pro Pro Arg Asn

 Leu Pro Pro Ile Thr Val Met Thr Phe His Asn Asn Asn Ile Val Lys Ile
 Leu His His Ser Pro *** Trp Pro Ser Ser Thr Thr Thr Ile Ser Ser Lys ***
 Cys Thr Thr Pro His Asn Gly His His Leu Leu Pro Gln *** Gln His Ser Lys

 TGT TCA CCA CCC TAC CAA TCG TAC CAC TTC ACC AAC AAT AAC TAC TGA AAA
 657 666 675 684 693 702
 ACA AGT CGT CGG ATG GTT ACC ATG GTG AAG AAG TCG TTG TTA TTG ATG ACT TTT

 Thr Ser Gly Gly Met Val Thr Met Val Lys Lys Trp Leu Leu Leu Met Thr Phe
 Gln Val Val Gly Trp Leu Pro Trp *** Arg Ser Gly Cys Tyr *** *** Leu Leu
 Lys Trp Trp Asp Gly Tyr His Gly Glu Glu Val Val Ile Asp Asp Phe Tyr

 Ala Pro Gln Gly Pro Ile Ile *** Gln Ser Gln Thr Ile Ser Ile Trp Gln Ser
 Pro Gln Ser Gly Gln Ser Ser Arg Ser Leu Ser His Ser Arg Tyr Gly Asn Val
 His Ser Ala Ala Arg Pro His Asp Val Ser Val Thr His Asp Ile Asp Met Ser

 TAC CGA CCG ACG GGA CCC TAG TAG ATG ACT CTG ACA CAC TAG CTA TAG GTA ACT
 711 720 729 738 747 756
 ATG CCT CGC TGC CCT GGG ATG ATC TAC TGA GAC TGT GTG ATC GAT ATC CAT TGA

 Met Ala Gly Cys Pro Gly Met Ile Tyr *** Asp Cys Val Ile Asp Ile His ***
 Trp Leu Ala Ala Leu Gly *** Ser Thr Glu Thr Val *** Ser Ile Ser Ile Asp
 Gly Trp Leu Pro Trp Asp Asp Leu Leu Arg Leu Cys Asp Arg Tyr Pro Leu Thr

 Tyr Leu Ser Phe Thr Ser Ser Tyr Arg Lys Gln Gly Ala Thr Asn Gln Asn Gly
 Thr Ser Val Leu Pro Pro Val Thr Gly Lys Lys Ala Arg Leu Ile Arg Ile Val
 Gln Leu Ser *** Leu His Phe Gln Val Lys Lys Pro Gly Cys Tyr Glu Ser ***

 GAC ATC TCT GAT TTC CAC CTT GAC ATG GAA AAA ACC GGG CGT CAT AAG ACT AAT
 765 774 783 792 801 810
 CTG TAG AGA CTA AAG GTG GAA CTG TAC CTT TTT TGG CCC GCA GTA TTC TGA TTA

 Leu *** Arg Leu Lys Val Glu Leu Tyr Leu Phe Trp Pro Ala Val Phe *** Leu
 Cys Arg Asp *** Arg Trp Asn Cys Thr Phe Phe Gly Pro Gln Tyr Ser Asp Tyr
 Val Glu Thr Lys Gly Gly Thr Val Pro Phe Leu Ala Arg Ser Ile Leu Ile Thr

FIGURE 8 (continuation 2)

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Ala Ile Leu Gly Arg Gln Phe Pro Val Gly *** Ser Ser Asp Trp Ser Tyr Phe
 Leu Leu *** Val Gly Asn Ser His Tyr Glu Glu Val Ala Thr Gly Ala Thr Ser
 Trp Cys Asp Ser Gly Thr Pro Ile Thr Ser Arg Leu Gln Gln Gly Leu Gln Leu
 CGT CGT TAG TCT GGG CCA ACC TTA CCA TGA GGA GTT GAC GAC ACG GTC GAC ATC
 819 828 837 846 855 864
 CCA GCA ATC AGA CCC CGT TCG AAT GGT ACT CCT CAA CTG CTG TCC CAG CTG TAG
 Pro Ala Ile Arg Pro Arg Trp Asn Gly Thr Pro Gln Leu Leu Ser Gln Leu ***
 Gln Gln Ser Asp Pro Val Gly Met Val Leu Leu Asn Cys Cys Pro Ser Cys Arg
 Ser Asn Gln Thr Pro Leu Glu Trp Tyr Ser Ser Thr Ala Val Pro Ala Val Glu

 Ser Lys Ile Pro Pro Asn Ser Gly Gln Tyr Lys Pro Leu Ile Ser Cys Phe Leu
 Ala Arg *** Arg Leu Ile Val Glu Lys Thr Asn Gln Phe Phe Ala Val Ser Cys
 Leu Glu Lys Asp Ser Ser *** Lys Arg Pro Ile Lys Ser Ser His *** Leu Val
 TTC GAC AAA TAG CCT CCT AAT GAA GGA ACC ATA AAA CCT TCT TAC GAT GTC TTG
 873 882 891 900 909 918
 AAG CTC TTT ATC GGA GGA TTA CTT CCT TCG TAT TTT CCA AGA ATG CTA CAG AAC
 Lys Leu Phe Ile Gly Gly Leu Leu Pro Trp Tyr Phe Gly Arg Met Leu Gln Asn
 Ser Ser Leu Ser Glu Asp Tyr Phe Leu Gly Ile Leu Glu Glu Cys Tyr Arg Thr
 Ala Leu Tyr Arg Arg Ile Thr Ser Leu Val Phe Trp Lys Asn Ala Thr Glu Gln

 Gly Arg Leu Phe Pro Ala Leu Glu Asp/Gly Lys Gly Trp Ala Arg Phe Lys
 Asp Val Ser Ser Pro Pro Trp Asn Thr Val Arg Glu Gly Gly His Gly Ser Asn
 Ile Trp Pro Pro Leu Pro Gly Thr Arg *** Gly Lys Gly Gly Met Gly Gln Ile
 TTA CGT CCC TCC TTC CCC CCG TCA AGC ACT CGG AAA CGG CGG GTA CGG GAC TTA
 927 936 945 954 963 972
 AAT CCA CGG AGG AAG GGG GCC AGT TCG TCA CCC TTT CCC CCC CAT CCC CTG AAT
 Asn Pro Arg Arg Lys Gly Ala Ser Ser Ser Pro Phe Pro Pro His Ala Leu Asn
 Ile His Gly Gly Arg Gly Pro Val Arg His Pro Phe Pro Pro Met Pro *** Ile
 Ser Thr Glu Glu Gly Gln Phe Val Thr Leu Ser Pro Pro Cys Pro Glu Phe

 Trp Ile Phe Tyr Ile Val Ser Asp Lys Lys Asp Ser Arg Leu Pro Lys ***
 Gly Tyr Ser Ile Phe *** Gln Thr Lys Lys Ile Val Glu Tyr His Asn Lys Asn
 Glu Met His Phe Leu Asn Ser Leu Arg Lys *** *** Lys Thr Ile Thr Lys Ile
 AAG GTA TAC TTT ATT TAA TGA CTC AGA AAA AAT ACT GAA GCA TTA CCA AAA ATA
 981 990 999 1008 1017 1026
 TTC CAT ATG AAA TAA ATT ACT GAG TCT TTT TTA TCA CTT CGT AAT GGT TTT TAT
 Phe His Met Lys *** Ile Thr Glu Ser Phe Leu Ser Leu Arg Asn Gly Phe Tyr
 Ser Ile *** Asn Lys Leu Leu Ser Leu Phe Tyr His Phe Val Met Val Phe Ile
 Pro Tyr Glu Ile Asn Tyr *** Val Phe Phe Ile Thr Ser *** Trp Phe Leu Leu

 Glu Asn Leu Thr Leu His Pro Thr Lys Leu Ile Leu Asn Glu Ser Asn Tyr Met
 Asn Met Leu Pro *** Thr Pro Pro Arg *** Phe *** Ile Arg Gln Ile Thr Cys
 Ile *** Pro Asn Leu Pro Pro Asp Lys Phe Asn Phe Glu Arg Phe Gln Val
 ATA AGT AAT TCC CAA TTC ACC CCC CAG AAA TTT TAA TTT AAG AGA CTT AAC ATG
 1035 1044 1053 1062 1071 1080
 TAT TCA TTA AGG GTT AAG TGG GGG GTC TTT AAA ATT AAA TTC TCT GAA TTG TAC
 Tyr Ser Leu Arg Val Lys Trp Gly Val Phe Lys Ile Lys Phe Ser Glu Leu Tyr
 Ile His *** Gly Leu Ser Gly Gly Ser Leu Lys Leu Asn Ser Leu Asn Cys Thr
 Phe Ile Lys Gly *** Val Gly Gly Leu *** Asn *** Ile Leu *** Ile Val His

FIGURE 8 (continuation 3)

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Cys Pro *** Val Ser Ile Thr Asn Arg Thr Thr Tyr Val Thr Lys Ser Arg Leu
 Val His Asn Cys Pro Tyr Gln Ile Gly Pro Arg Ile Tyr Gln Lys Arg Val Cys
 Tyr Met Thr Val Arg Ile Asn Tyr Glu Gln Asp Tyr Ile Ser Asn Glu Phe Ala

 TAT GTA CCA ATG TCC CTA TAA CAT AAG GAC CAG CAT ATA TCA CAA AAG CTT CGC
 1089 1098 1107 1116 1125 1134
 ATA CAT CGT TAC ACG GAT ATT GTA TTC CTG GTC GTA TAT AGT GTT TTC GAA CCC
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Ile His Gly Tyr Thr Asp Ile Val Phe Leu Val Val Tyr Thr Val Phe Glu Arg
 Tyr Met Val Thr Arg Ile Leu Tyr Ser Trp Ser Tyr Ile Leu Phe Ser Asn Ala
 Thr Trp Leu His Gly Tyr Cys Ile Pro Gly Arg Ile Tyr Cys Phe Arg Thr Gln
 Ala Ser Ala *** Thr Thr *** Met Glu Leu Leu Lys Tyr Asp *** Gly Cys Ser
 His Arg Pro Arg Arg Pro Arg Cys Lys Trp Cys Asn Thr Thr Glu Ala Val Ala
 Thr Gly Leu Gly Val His Asp Val Asn Gly Ala Thr Gln Leu Arg Leu Trp Leu
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 TCA CGG CTC CGG ATG CAC CAG ATG TAA ACG TCG TCA AAC ATC AGA GTC CGT GTC
 1143 1152 1161 1170 1179 1188
 AGT CCC GAG GCC TAC GTG GTC TAC ATT TCC ACC AGT TTG TAG TCT CAG CCA CAG
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Ser Ala Glu Ala Tyr Val Val Tyr Ile Ser Ser Ser Leu *** Ser Gln Pro Gln
 Val Pro Arg Pro Thr Trp Ser Thr Phe Pro Ala Val Cys Ser Leu Ser His Ser
 Cys Arg Gly Leu Arg Gly Leu His Phe Gln Gln Phe Val Val Ser Ala Thr Ala
 Thr Glu Lys Thr Thr Gln Asn Ser Thr Ile Leu Ser Ile *** Ser Leu Asn
 Pro Lys Lys Gln Gln Lys Thr Pro Leu Leu *** Tyr His Phe Arg Pro Cys Thr
 Gln Asn Arg Lys Asn Asn Pro Gln Phe Tyr Asp Ile Thr Phe Asp Leu Val Pro
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 GAC CAA AGA AAA CAA CAA ACC AAC CTT CAT TAG TTA TCA CTT TAG ATC CTG TCC
 1197 1206 1215 1224 1233 1242
 CTG GTT TCT TTT GTT TCG TTG GAA GTA ATC AAT ACT GAA ATC TAG GAC AGG
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Leu Val Ser Phe Val Val Trp Leu Glu Val Ile Asn Ser Glu Ile *** Asp Arg
 Trp Phe Leu Leu Phe Gly Trp Lys *** Ser Ile Val Lys Ser Arg Thr Gly
 Gly Phe Phe Cys Cys Leu Val Gly Ser Asn Gln *** *** Asn Leu Gly Gln Val
 Pro Pro Leu Thr Gly Pro Thr Thr Pro Ser Pro Ser Pro *** Pro Ile Ala Pro
 Gln Pro Tyr Leu Val Pro Leu Pro Leu Leu Ala Pro Asn His Tyr Pro Pro
 Lys Pro Thr Phe Tyr Arg Ser His Tyr Ser Phe Pro Gln Thr Ile Thr His Arg
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 AAA CCC CCA TTT CAT CGC CCT CAC CAT CCT CTT CCC GAC CCA ATA CCA TAC CGC
 1251 1260 1269 1278 1287 1296
 TTT GGG GGT AAA GTA CCG CGA GTG GTA CGA GAA GGG CTG CCT TAT GGT ATG CGG
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Phe Gly Gly Lys Val Pro Gly Val Val Gly Glu Gly Leu Gly Tyr Gly Met Ala
 Leu Gly Val Lys Tyr Arg Glu Trp *** Glu Lys Gly Trp Val Met Val Trp Arg
 Trp Gly *** Ser Thr Gly Ser Gly Arg Arg Ala Gly Leu Trp Tyr Gly Gly
 Pro Thr Thr *** Met Pro Thr Met Pro Ser Pro Gln Pro Arg Gln *** Leu Thr
 Leu Leu Leu Lys Cys Leu Pro *** Leu His Pro Ser His Gly Lys Asn Cys Leu
 Ser Ser Tyr Asn Val Tyr Pro Asp Tyr Thr Leu Ala Thr Ala Lys Thr Val Phe
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 CCT CCT CAT CAA ATG TAT CCC CAG TAT CCA CTC CGG ACA CGG GAA ACA ATG TTT
 1305 1314 1323 1332 1341 1350
 CGA CGA GTA GTT TAC ATA CGG GTC ATA CGT GAG GGC TGT CCC CTT TGT TAC AAA
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Gly Gly Val Val Tyr Ile Gly Val Ile Gly Glu Gly Cys Gly Leu Cys Tyr Lys
 Glu Glu *** Phe Thr *** Gly Ser *** Val Arg Ala Val Ala Phe Val Thr Lys
 Arg Ser Ser Leu His Arg Gly His Arg *** Gly Leu Trp Pro Leu Leu Gln Ser

FIGURE 8 (continuation 4)

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Ile Met *** Phe Leu Leu Val Pro Ala Trp Glu Gly Thr Val Arg Pro Ser Arg
 *** Arg Phe Tyr Cys Cys Gln Leu Gly Ser Gly Gln *** Gly Pro His Asp
 Asn Asp Asp Leu Ile Val Ala Ser Ser Gly Val Gly Arg Asp Gly Gln Thr Ile
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 CAA TAG TAG ATT TTA TTG TCG TGA CCT CGG GTG AGG CGA CAG TCG GAC CCA CTA
 1359 1368 1377 1386 1395 1404
 GTT ATC ATC TAA AAT AAC AGC ACT GGA GCC CAC TCC CCT GTC ACC CTG CGT CAT
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Val Ile Ile *** Asn Asn Ser Thr Gly Ala His Ser Pro Val Thr Leu Gly Asp
 Leu Ser Ser Lys Ile Thr Ala Leu Glu Pro Thr Pro Leu Ser Pro Trp Val Ile
 Tyr His Leu Lys *** Gln His Trp Ser Pro Leu Pro Cys His Pro Gly *** Ser
 Pro Ala Pro Gly Ser Asn Leu Arg Leu Arg Glu *** Glu Thr Thr Asn Leu Pro
 Pro Leu Leu Ala Leu Ile *** Gly *** Gly Lys Lys Asn Gln Leu Ile *** Leu
 Pro Ser Cys Pro Trp Phe Glu Val Lys Val Lys Arg Ile Arg Tyr Tyr Glu Phe
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 CCC CCT CGT CCC GGT CTT AAG TTG GAA TTG GAA AGA ATA AGA CAT CAT AAG TTT
 1413 1422 1431 1440 1449 1458
 CCG CGA GCA GGG CCA GAA TTC AAC CTT AAC CTT TCT TAT TCT GTC GAA TTC AAA
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Arg Gly Ala Gly Pro Glu Phe Asn Leu Asn Leu Ser Tyr Ser Val Val Phe Lys
 Gly Glu Gln Gly Gln Asn Ser Thr Leu Thr Phe Leu Ile Leu *** Tyr Ser Lys
 Gly Ser Arg Ala Arg Ile Gln Pro *** Pro Phe Leu Phe Cys Ser Ile Gln Arg
 Cys Leu Ala Pro Thr Gln Gly Glu Gln Pro Phe Phe Thr Met Leu Ile Ser
 Ala Cys Leu Pro Pro Lys Val Gly Arg Arg Pro Ser Ser Leu *** *** Tyr Gln
 Pro Val Ser Arg Pro Asn Ser Gly Gly Pro Pro Leu Phe Asp Asn Ile Asn
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 CCC GTG TCT CGC CCC CAA ACT CGG CGG AGG ACC CCC TTC TTT CAG TAA TTA TAA
 1467 1476 1485 1494 1503 1512
 CCG CAC AGA CGG GGG GTT TGA CCC CCC TCC TCG CGG AAG AAA GTC ATT AAT ATT
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Gly His Arg Ala Gly Val *** Pro Pro Ser Trp Gly Lys Lys Val Ile Asn Ile
 Gly Thr Glu Arg Gly Phe Asp Pro Pro Gly Gly Arg Lys Ser Leu Ile Leu
 Ala Gln Ser Gly Leu Thr Pro Leu Leu Gly Glu Ser His *** Tyr ***
 Asp *** *** Thr Trp Arg Gly Pro Pro Arg Glu Ser Gln Pro Glu Ser Ser Leu
 Ile Glu Asp His Gly Gly Leu Leu Ala Asn Gln Ser His Asn Ala Gln Cys
 Phe Arg Met Met Asp Val Ala Trp Ser Pro Thr Arg Val Thr Thr Arg Lys Val
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 CTT AGA GTA GTA CAG GTG CGG GGT CCT CCC GCA AGA CTG ACA CCA ACC GAA CTG
 1521 1530 1539 1548 1557 1566
 GAA TCT CAT CAT GTC CAC CGC CCA GGA CGG CGT TCT GAC TGT CGT TCG CTT GAC
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Glu Ser His His Val His Arg Pro Gly Gly Arg Ser Asp Cys Gly Ser Leu Asp
 Asn Leu Ile Met Ser Thr Ala Gln Glu Gly Val Leu Thr Val Val Arg Leu Thr
 Ile Ser Ser Cys Pro Pro Arg Arg Ala Phe *** Leu Trp Phe Ala *** Gln
 Ile Asp Ser Pro Ala Pro Ser Ala Pro Thr Ser Ser Ala Met Lys Gly Glu Gly
 Tyr Ile Arg Leu His Pro Leu Pro Pro His Gln Leu His Trp Lys Glu Lys Glu
 Thr Tyr Gly Phe Thr Arg Ser Leu Arg Thr Asn Phe Ile Gly Asn Lys Arg Arg
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 TCA TAT AGG CTT CCA CGC CCT CTC CGG CCA CAA CTT CTA CGG TAA AAA GGA ACA
 1575 1584 1593 1602 1611 1620
 AGT ATA TCC GAA GGT GCG GGA GAG GCG GGT GTT GAA GAT CCC ATT TTT CCT TCT
 --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 Ser Ile Ser Glu Gly Ala Gly Glu Ala Gly Val Glu Asp Ala Ile Phe Pro Ser
 Val Tyr Pro Lys Val Arg Glu Arg Arg Val Leu Lys Met Pro Phe Phe Leu Leu
 Tyr Ile Arg Arg Cys Gly Arg Gly Cys *** Arg Cys His Phe Ser Phe Ser

FIGURE 8 (continuation 5)

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Ala Thr Val Thr Ala Pro Thr Ser Ser Gly Pro Ala Ala Ala Ser Ser Arg Ala
 Leu Pro Leu Pro Pro Pro Pro Pro Arg Ala Leu Pro Pro Pro Pro Pro Asp Pro
 Trp Arg Tyr Arg His Arg Pro His Val Leu Trp Pro Arg Arg Arg Leu Ile Gln
 GGT CGC CAT TGC CAC CGC CCC CAC CTG CTC CGT CCT CCC CGC CGC CTC CTA GAC
 1629 1638 1647 1656 1665 1674
 CCA CGC GTA ACG GTG GCG GCG GTG GAC GAG CCA CGG GCG CGG GAG GAT CTG
 Pro Ala Val Thr Val Ala Gly Val Asp Glu Pro Gly Ala Ala Ala Glu Asp Leu
 Gln Arg *** Arg Trp Arg Gly Trp Thr Ser Gln Gly Arg Arg Arg Arg Ile Trp
 Ser Gly Asn Gly Gly Gly Arg Ala Arg Gly Gly Gly Ser Gly

Leu Ile Ala Ala Pro Ala Thr Asp Glu Glu Glu Thr Val Gly Gly Gln Ile Arg
 Trp Ser Pro Gln Pro Pro Pro Thr Lys Lys Lys Pro Leu Ala Glu Lys Ser Val
 Gly Leu His Ser Arg Pro Arg His Arg Arg Arg Arg Tyr Arg Arg Arg Pro Tyr
 CCG TTC TAC CGA CGC CCC CGC CAC AGA AGA AGA ACC CAT TGC CGA CGA ACC TAT
 1683 1692 1701 1710 1719 1728
 GCC AAG ATG CCT CGG GGG CGG GTG TCT TCT TCG GTA ACC CCT CCT TCG ATA
 Ala Lys Met Ala Ala Gly Ala Val Ser Ser Ser Ser Val Thr Pro Pro Trp Ile
 Pro Arg Trp Leu Arg Gly Arg Cys Leu Leu Arg *** Arg Leu Leu Gly Tyr
 Gln Asp Gly Cys Gly Val Phe Phe Gly Asn Ala Ser Leu Asp Thr

*** Ile Gln Phe Arg Phe Phe His Ala Thr Leu Ile
 Asp Tyr Arg Phe Val Phe Ser Thr Arg Gln Leu Tyr
 Thr Met Asp Ser Phe Ser Leu Leu Ala Ser Tyr Thr Asn

GCA GTA TAG ACT TTT GCT TTC TTC ACC CGA CAT TCA TAA 5'
 1737 1746 1755 1764

CGT CAT ATC TCA AAA CGA AAG AAG TGC GCT GTA AGT ATT 3'
 Arg His Ile *** Lys Arg Lys Lys Cys Ala Val Ser Ile
 Val Ile Ser Glu Asn Glu Arg Ser Ala Leu *** Val
 Ser Tyr Leu Lys Thr Lys Glu Val Arg Cys Lys Tyr

FIGURE 8 (continuation 6)

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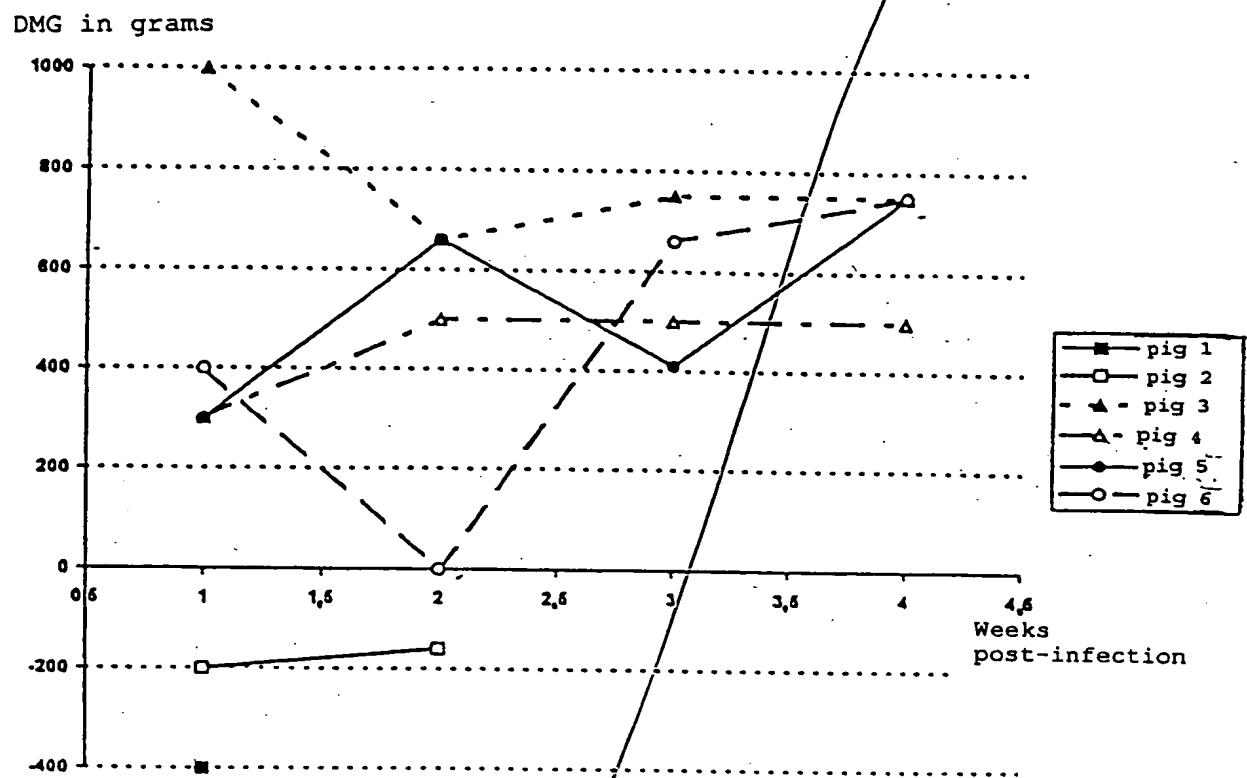


FIGURE 9

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dmg: d0 - d28

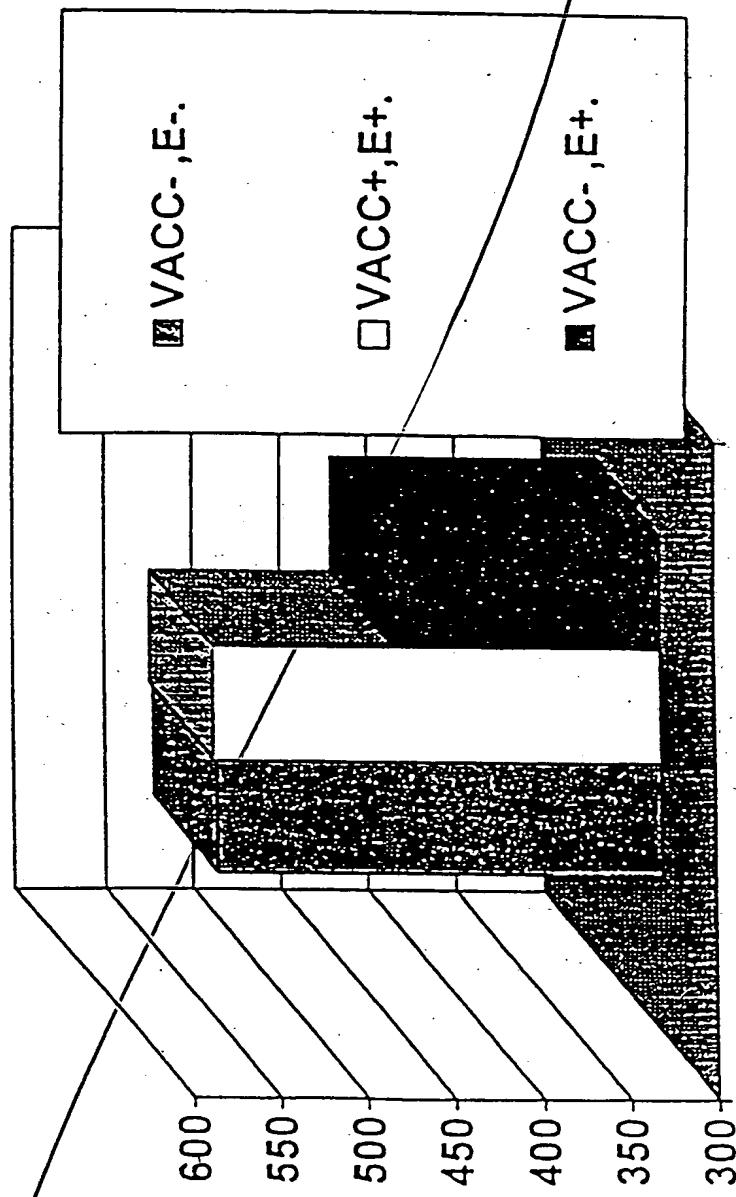


FIGURE 10

% HYPERTHERMIA > 41°C

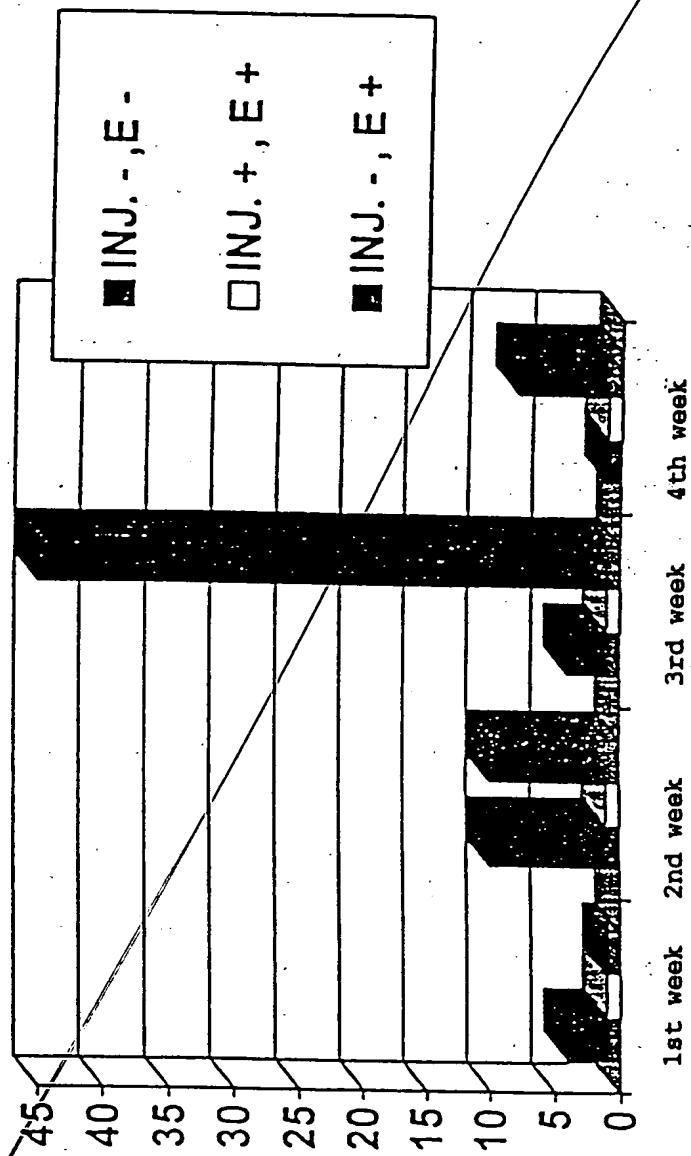


FIGURE 11

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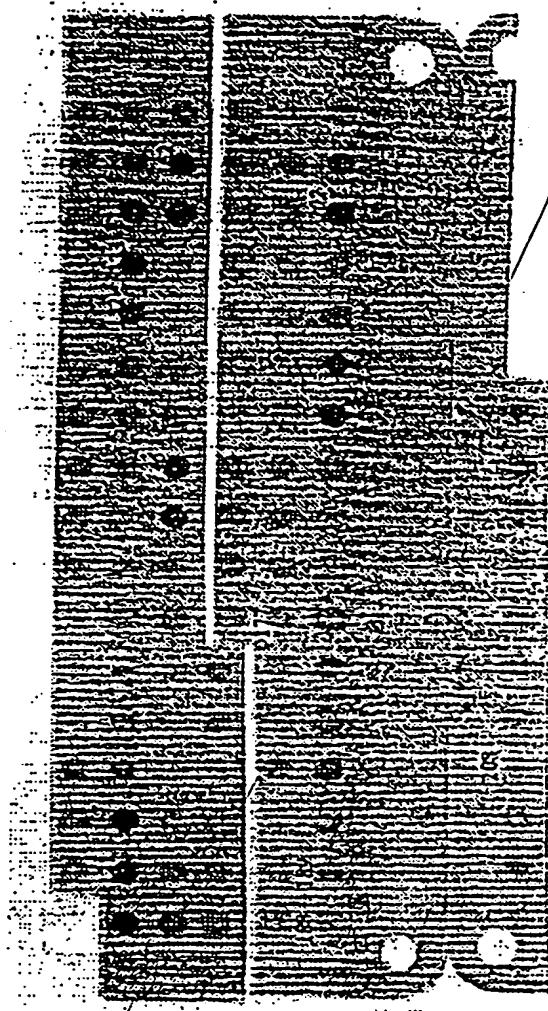


FIGURE 12

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1
 50 51
 pcvA MTWPRRRYRR RRTTTPRSHLG NILRRRPyLV HPAFRNRYRW RRKTGIENSR LSREFVLTI. RGGHQSOPSWN
 pcvB MTYPRRRYRR RRHRRPRSHLG QILRRRPyLV HP. RHYRW RRKNGIENTR LSRTFGYTVK RTTVRTPSWA

peptide 177 100 101
 pcvA VNELRFNIGO FLPPSGGTNP LPLPFQYYRI RKAKYEFYPR DPITSNQRGV GSTVVIDAN FVTPSTNIALY
 pcvB VDMMRFNIND FLPPGGGSNP RSVPFEYYRI RKVKVFEWPC SPITQGDRGV GSSAVILDDN FVTKATALTY

peptide 121

150 151
 pcvA DPYINYSSRH TIRQPFETYHS RYFTPQPELD QTIDW~~E~~QPNM KRNQLWLHLN THTNVEHTGL GYALQNATTA
 pcvB DPYVNYSRRH TITQPFESYHS RYFTPQPVLD FTIDYFQPNM KRNQLWLRLQ TAGNVDHVGL GTAFENSIYD

peptide 188 to 189

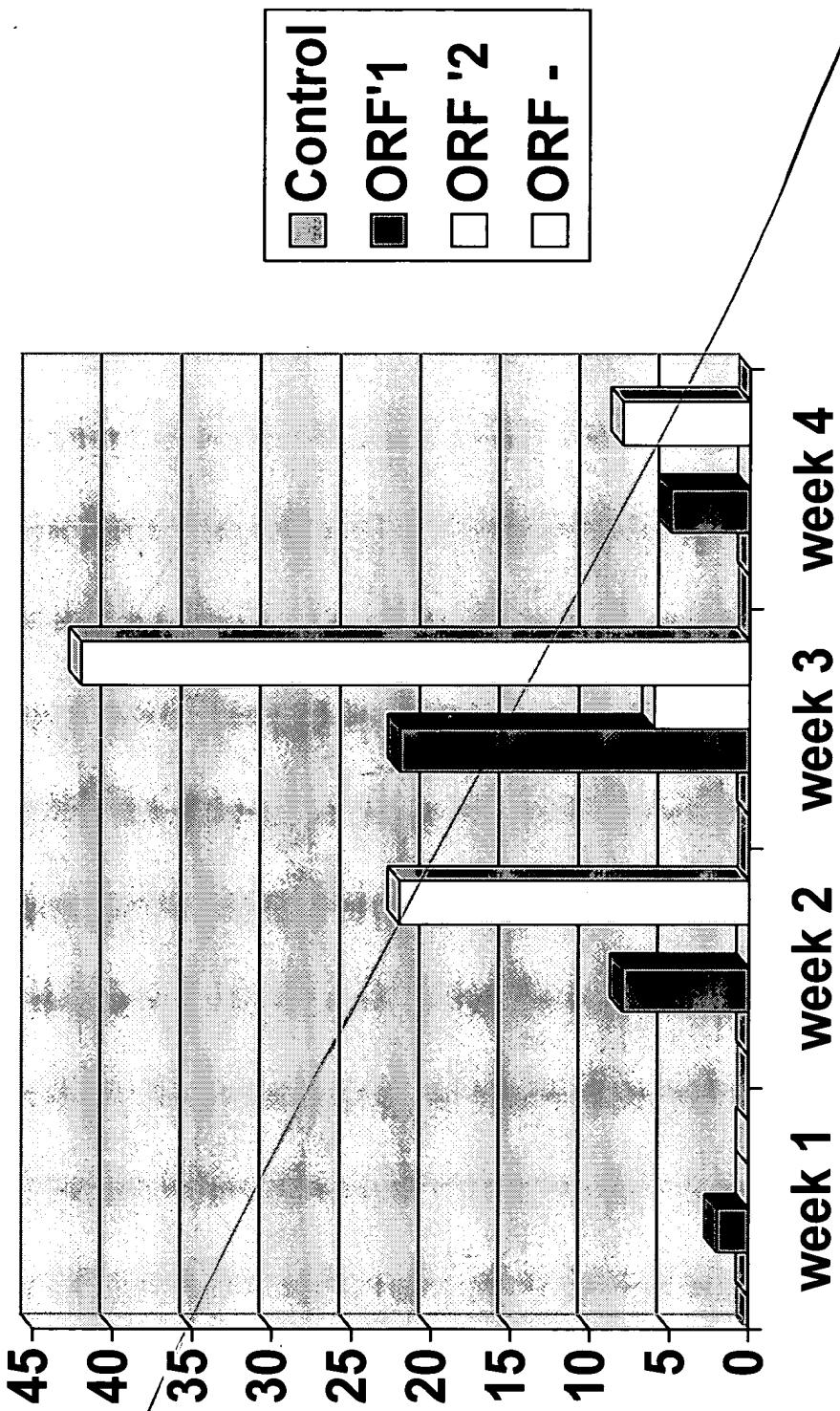
peptides 132 to 133
 pcvA QNYVVRLTIV VQFREFILKD P.LNE
 pcvB QEYNIRVTMY VQFREFNEKD PPLNP

peptide 152

235

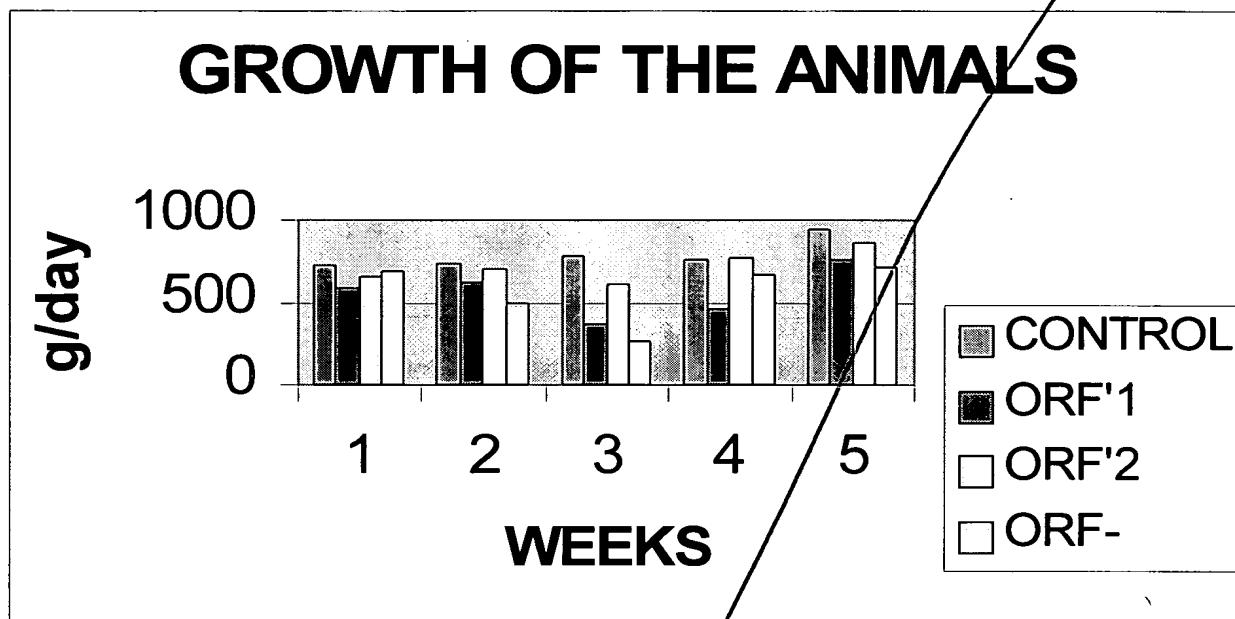
FIGURE 13

Figure 14



Percent hyperthermia (> 40.5°C), Control (not vaccinated and not challenged), ORF'1 (vaccinated and challenged), ORF'2 (vaccinated and challenged), ORF- (not vaccinated, challenged)

Figure 15



Control (not vaccinated and not challenged), ORF'1(vaccinated and challenged) ORF'2 (vaccinated and challenged), ORF- (not vaccinated, challenged)

Figure 16

Immunoperoxidase staining of PK15 cells at 24 h post-transfection with the pcDNA3/ORF'2 plasmid. Expression of PCV-B ORF'2 was confirmed by IPMA following incubation in the presence of the swine anti-PCV-B monospecific serum.

